BRITISH MEDICAL JOURNAL

LONDON: SATURDAY, FEBRUARY 15th, 1936

PUERPERAL SEPSIS FROM THE VIEWPOINT OF SURGERY*

BY

VICTOR BONNEY, M.S., B.Sc., F.R.C.S., F.R.A.C.S.

GYNAECOLOGICAL AND OBSTETRICAL SURGEON TO MIDDLESEX HOSPITAL

Sixteen years ago in a paper dealing with maternal mortality I urged that pregnancy should be regarded as a state induced by the growth of a neoplasm, labour as the operation by which the neoplasm was removed, and the puerperium as a period of post-operative convalescence.[1] In the whole sense an operation can be defined as a proceeding involving a dissolution of tissue juxtaposition by purposive force. This definition includes both that severance of tissue continuity which we call a wound and that alteration in the relation of the tissues without a wound which is exemplified in the reduction of a deformity. Labour falls under the former of these categories.

The source of the force may lie with the individual person, or a second person, or be related to both individuals. The removal by oneself of a splinter or a tooth and the spontaneous expulsion from the uterus of a fibroid or the products of gestation may be cited as examples of the first; Caesarean section as an example of the second; and forceps delivery as an example of the third.

Intrinsic and Extrinsic Sepsis

In the paper mentioned, the description of puerperal sepsis as either "extrinsic" or "intrinsic" in origin was first employed, meaning by "extrinsic" that derived from an outside source, and by "intrinsic" that derived from the patient's own body. I pointed out that all post-operative sepsis—not merely that which follows labour—could be similarly classified, and that antiseptic measures at their first introduction were much more directed to preventing infection from without than from within. Partial as was the initial effort, a very great effect was rapidly produced. The sepsis endemic in surgery disappeared almost at once, and operations soon became relatively safe.

During our lifetime the measures against operative sepsis of extrinsic origin have become more and more stringent. Steam sterilization of gowns, drapings, and swabs, the use of rubber gloves, the operation mask, and really sterile catgut have all been introduced within that period. In more recent years surgeons have seriously considered the problem of preventing sepsis of intrinsic origin—a far more difficult matter. Intensive pre-operative measures for sterilizing (or sterilizing as far as possible) the operation area, its isolation from contiguous parts by sheeting and packing, and the elimination of areas of sepsis in other parts of the body, are all steps in this direction. Immunization of the patient beforehand has been the subject of experiment and trial, but up to now with no marked success.

The effect of Lister's discovery on surgery and obstetrics respectively has often been contrasted, much to the disadvantage of the latter, but the comparison is not so simple as it appears at first sight. Before Lister's time surgical sepsis was endemic, with epidemic exacerbations, but obstetrical sepsis, as the mortality rates of these days show, was not endemic but sporadic, with epidemic increases.

In surgery such sepsis as occurs nowadays is nearly always sporadic, though small epidemics do still occasionally occur in surgical wards. Endemicity has been abolished. In obstetrics at the present time most of the sepsis is sporadic. The often-recurring epidemics have been greatly reduced in frequency, though now and then, as in surgery, restricted outbreaks still occur.

In making the comparison it must be remembered that in pre-Listerian times surgery was in a much worse case than obstetrics, and therefore had a wider scope for dramatic improvement. Allowing for this, the effect up to now of antiseptic measures on surgery and obstetrics respectively may be summed up by saying that in both of them it has caused the incidence of sepsis to become chiefly sporadic.

Sepsis in Surgery

Considering first surgical sepsis as it stands to-day, the rare epidemics in the surgical wards need not detain us. They are certainly due to a breakdown in the measures employed against extrinsic infection, and the place where the breakdown occurs is nearly always the operating theatre. These cases form a very small proportion of the whole. We may similarly dismiss the numerous cases where an operation performed on account of already existing sepsis is followed by sepsis. In the vast majority of these the post-operative state is a continuance of the state existing before the operation. The infection is intrinsic.

There remain those cases where sepsis develops after an operation in an area presenting beforehand no signs of pathological infection. It is necessary to use the term "pathological," because certain parts of the body, the inner surface of the intestines, and the outer surface of the skin, for instance, are normally the residence of micro-organisms. The point at which normality passes into abnormality is indefinable, since some of the organisms natural to these situations are potential for sepsis, given certain conditions, the chief of which is a lowered state of the tissue resistance. This lowering may be general or local, and in the latter case injury is the usual cause.

* An address delivered to the City Division of the British Medical Association.

Every operation on a part which beforehand contains micro-organisms carries with it, therefore, the possibility of disturbing the balance between bacterial and tissue capability, but the margin of safety allowed the surgeon varies very much. In the case of the skin it is wide, but there are certain situations, as, for instance, the lower reaches of the intestine, where operations are almost always followed by more or less abnormal activity on the part of the organisms resident there, and such operations are therefore attended with a very definite risk of post-operative sepsis.

But beyond the normal bacterial contents of certain parts of the body some individuals habitually carry in one or more of them organisms not merely of relative but of absolute pathogenicity. These carriers fall into two classes: a few can carry, harmlessly to themselves, organisms exceedingly dangerous to other individuals; but in the large majority the boundary between bacterial potentiality and tissue resistance is very fragile. The best example of this state of affairs is given by those unfortunate persons who harbour virulent streptococci in many parts of their bodies, and in whom any lowering of the tissue resistance, whether general or local, is immediately followed by more or less grave consequences.

The liability for sepsis to follow operations on parts which beforehand exhibit no signs of pathological infection varies according to the quantity and quality of the organisms present in the area operated on; therefore, other things being equal, it is least in simple wounds of the skin and greatest in wounds of the lower reaches of the intestine. This differing incidence shows that the larger proportion of sporadic cases of post-operative sepsis must arise from infection of intrinsic origin, for if any considerable part of them arose from infection from an outside source the frequencies would bear no relation to the pre-existent bacterial contents of the areas of operation.

Sepsis after Labour

We now turn to consider sepsis following the operation of labour. In Great Britain for every 1,000 children born alive about two mothers die from puerperal sepsis. The mortality rate of the notifiable cases of the disease is about 20 per cent. When one considers the magnitude of the operation of labour a sepsis morbidity rate of 1 per cent. and a sepsis mortality rate of 0.2 per cent. are very low judged by the standards of surgery. A great many people, however, do not accept this standard; they argue that labour, being a natural act, should be as safe as defaecation or micturition. They overlook, I think, the fact that reproduction is carried out for the maintenance of the race, not the individual, and is attended by a mortality in ali species of animals; and, moreover, death itself is a natural act.

But whether the sepsis rate after labour should be considered low or high, one mortifying fact stands out clearly—namely, that in spite of much thought and endeavour we have only succeeded in lowering it very little since pre-Listerian times. The enormous reduction that has been effected in surgical sepsis is often held up as a reproach to the obstetrician who is bidden to "go and do likewise." The fact is, however, that he has already done so in so far as the scope for improvement by measures directed against extrinsic infection permitted. The surgeon by antiseptic measures has abolished endemic surgical sepsis and almost abolished epidemic surgical sepsis, the two irrefutable manifestations of extrinsic infection as it concerns his art. The obstetrician had no endemic puerperal sepsis to abolish, but he has nearly abolished epidemic puerperal sepsis, the irrefutable manifestation of extrinsic infection as it concerns his art. But neither surgeon nor obstetrician has succeeded in abolishing sporadic cases of sepsis. The question is suggested: have they both arrived at irreducible minima?

Sources of Infection

As regards surgery, we see that the problem of abolishing sporadic cases of post-operative sepsis is largely a question of abolishing intrinsic infection. This has certainly not been completely effected, and perhaps never will, but nevertheless, in the course of a long surgical career I have witnessed a steady reduction in the number of these cases *pari passu* with the various latter-day refinements and safeguards in operative technique. Twenty-five years ago our defences against infection from without—steam sterilization, gloves, and masks—were in use as they are to-day, and yet since that time operations have become progressively safer and convalescence is now markedly more smooth. Disasters still occasionally occur, but less often, and there is a striking diminution in those "excursions and alarms" of convalescence which add so much to the strain on the surgeon. His life has become easier.

The operation of spontaneous labour differs from the cutting operations of surgery in one important particular—namely, that in the former the necessary force is applied under circumstances of absolute sterility, whereas in the latter this can never be achieved, however elaborate the technique. In that regard spontaneous labour is comparable with an orthopaedic manipulative operation, and has a great advantage over surgical cutting operations, but on the other hand it has an important disadvantage. In the majority of surgical cutting operations the wound or wounds are closed, so that there is little chance of infection after the operation has been concluded, whereas the operation of labour leaves a wound open to possible infection for several days after the delivery. Infection of a surgical wound takes place as a rule during the operation; infection of the inevitable wound of labour occurs as a rule after the operation.

As regards the source of the organisms that give rise to puerperal sepsis, all are agreed that in the epidemic form the derivation is extrinsic. Epidemic cases, however, form quite a small proportion of all the cases, the large majority of which occur sporadically up and down the country, unassociated with any particular doctor, midwife, or institution. That this statement, moreover, applies not only to the present time but to the times before Lister, when epidemics were of frequent occurrence, is shown by the fact that the very marked reduction in the number of epidemics brought about by the coming of antiseptic measures effected very little reduction in the yearly total of deaths due to the disease. Then as now the bulk of the cases occurred sporadically, and no agreement as to the derivation of the infection in these sporadic cases has yet been reached.

Cases of sporadic sepsis occurring after labour, where the genital tract presents beforehand no signs of being pathologically infected, are paralleled by the cases of sporadic sepsis occurring after surgical cutting operations (of a magnitude comparable with the operation of labour) in which the area operated on presented beforehand no signs of pathological infection. Yet the sepsis mortality rate of surgery is probably somewhat higher, for to equal that attached to labour a surgeon would on the average have to perform 500 such operations before he had a death directly and solely due to sepsis.

It is admitted that in a certain proportion of sporadic cases of puerperal sepsis the infection is intrinsic in source, but there is disagreement as to the proportion. In the paper I wrote in 1919 I claimed that the proportion was major, and I have not changed my opinion.

For, admitting that the antiseptic measures employed in midwifery have been and still are less stringent than those of surgery, at least they have sufficed to abolish largely that manifestation of the disease in which the source of the infection is unquestionably extrinsic—namely, the epidemic. If then the larger proportion of the sporadic cases also derived their infection from without, the same measures ought to have effected a very considerable reduction, but they have not. As I see it, obstetricians in their efforts to abate sporadic puerperal sepsis are up against the same difficulty that faces surgeons in their efforts to abate sporadic post-operative sepsis. The problem that confronts them both is largely the problem of preventing infection of intrinsic origin.

Those who believe that in sporadic puerperal sepsis the bulk of the cases are infected from an outside source maintain their view chiefly on the results of bacteriological research. The commonest organism isolated from the septic uterus is a haemolytic streptococcus. Since bacteriological examination of the vagina of pregnant women only rarely reveals the presence of that organism it is argued that when found in the uterus it must in the large majority of cases have been conveyed from some outside source. I cannot enter now on the counter-arguments against this conclusion, but I would point out that experimental results that do not accord with clinical and statistical facts should be looked on askance. At the best they can only be a portion of the truth.

During recent years in certain epidemic outbreaks of the disease affecting certain institutions the infection is believed to have been derived from the throat or nose of one of the staff by what is called "spray infection." In order to prevent the occurrence of this, masks are now part of the antiseptic measures employed in all up-to-date lying-in hospitals, and in many instances in private practice as well. While welcoming this step as advancing the obstetrical standard of antisepsis nearer to that of surgery, I do not share the enthusiasm of those who believe that in "spray infection" the whole or at least the major part of the elusive mechanism of puerperal infection has at last been brought to light. If this source of infection was at all common in the past it is difficult to see why the very partial antiseptic measures employed in those days had such a marked effect on epidemics; if it was common in recent times the number of epidemics ought to have been much larger. The importance given by some to "spray infection" does not accord with the statistical fact that the bulk of the cases of puerperal sepsis are sporadic in incidence.

Masks have been introduced into the operating theatre during my surgical life, and unless sporadic post-parturitional sepsis differs widely in its origin from sporadic post-operative sepsis their introduction into obstetrics will operate as it has done in surgery—that is, as only one factor making for the desired improvement. There is no difficulty in shutting the door against extrinsic infection, for the sterilization of instruments, gloves, gowns, drapings, and other appliances and the wearing of sterilized impervious masks, if conscientiously carried out, renders it impossible, except by the very rare agency of air infection, but the case is otherwise with intrinsic infection.

Intrinsic Sepsis

Using the term "infected" to mean "containing organisms" whether potentially or actually pathogenic, and premising that the approaches to an operation area, wherever it be situated, are in this sense always infected, post-operative sepsis of intrinsic origin is seen to be able to occur in the following ways:

1. The operation area may be septic beforehand, and the post-operative sepsis merely a continuance.

2. The operation area may be infected beforehand, and the post-operative sepsis be caused by the excitation of the infection by the operative trauma.

3. The operation area may be infected beforehand, but the post-operative sepsis be caused by organisms from other parts of the body transported to the injured tissues by the blood or other natural currents.

4. The operation area may be infected beforehand, but the post-operative sepsis be caused by organisms transported from the approaches to the operation area by the surgeon during the operation.

5. The operation area may be sterile, and the post-operative sepsis be caused by organisms transported to the injured tissues by the blood or other natural currents.

6. The operation area may be sterile, and the post-operative sepsis be caused by organisms transported from the approaches to the operation area by the surgeon during the operation.

When we proceed to associate these six possibilities with puerperal sepsis in particular it is seen that numbers 1, 2, 3, and 4 denote cases where the uterus is either septic before delivery, as occurs in neglected obstructed labour, or infected before delivery by the introduction into it of organisms, either by that spontaneous ascent of organisms from the vagina which is known to occur, or by the agency of the obstetrician's hands or instruments. Number 5 relates to puerperal sepsis due to the spontaneous ascent into the sterile uterus of vaginal organisms either resident in the vagina before the labour or introduced into it by the obstetrician during the labour. Number 6 is applicable to those cases in which the obstetrician directly introduces into the sterile uterus organisms from the vagina or the external parts. It is sometimes assumed by loose-thinking persons that where puerperal sepsis is of intrinsic origin the obstetrician is necessarily absolved from the onus of it, whereas the considerations just enumerated show that on the contrary he may play a large part in it.

Conclusion

The conclusion to be drawn, I think, from the sum total of the arguments I have adduced is that, if the number of sporadic cases of puerperal sepsis is to be substantially diminished, Obstetrics must fully adopt the method of Surgery in its already largely successful efforts against sporadic post-operative sepsis of intrinsic origin. These methods may be summed up as the sterilization, or if sterilization be not possible the exclusion from the field of action, of the approaches to the operation area, the avoidance of unnecessary trauma and unnecessary haemorrhage in that area, and the removal beforehand of septic foci in other parts of the body. To these it is to be hoped the future will add reliable immunization of the patient before the operation. Hopeful results from the use of anti-streptococcal serum in cases of labour where sepsis after delivery was specially to be feared have recently been reported by H. J. Thomson.[2]

I have been charged by some who have misunderstood my writings with desiring to make obstetrics more operative. The reverse is the case. Only a fool would lightly interfere with the work of an operator of such experience and reputation as Nature, but I have consistently urged that the obstetrician should approach his cases in the spiritual attitude of a surgeon called upon to oversee an operation and perhaps take part in it himself.

References

[1] *Proc. Roy. Soc. Med.*, Obstetrical Section, 1919, xii, 75; *Lancet*, May 10th, 1919.
[2] *Journ. Obstet. and Gynaecol. British Empire*, 1935, xlii, No. 3.

MANIPULATIVE TREATMENT OF SUBACUTE AND CHRONIC FIBROSITIS

BY

T. STACEY WILSON, M.D., F.R.C.P.

CONSULTING PHYSICIAN, BIRMINGHAM GENERAL HOSPITAL

Although the symptomatology of fibrositis has of late been very fully dealt with in medical literature, general recognition does not seem to have been given to the possibility of effective treatment of its painful subacute and chronic stages by forcible breaking down of the nodules and cords to which much of the pain that characterizes the condition is due. In this essay the term "nodule" will also be understood to include the fibrositic cords which are so characteristic of this condition.

My experience of recent years has shown that in many patients who suffer from chronic rheumatic pain, even when associated with rheumatoid arthritis, the pain is due to the presence of fibrositic nodules, and the destruction of the latter by forcible manipulative treatment will in a few minutes set the patients free from pain on movement which may have troubled them for years. The painfulness of this treatment might be expected to deter patients from undergoing it, but the relief given by the destruction of cords and nodules is so immediate and so great that they are not only willing but anxious for a continuance of the treatment.

Clinical Features of Fibrositic Nodules

Certain clinical features of these nodules are made clear by the fact that they can be completely and rapidly destroyed by the right kind of manipulative treatment, and these features may be summarized as follows.

1. Fibrositic nodules are not due to a deposit of inflammatory tissue, but to the agglutination of normal fibres of either fibrous or muscular tissue by a minimal amount of inflammatory material due to some pre-existent inflammation. When a nodule is forcibly broken down it can in the course of a few minutes be made to disappear entirely in a manner which would not be possible if the bulk of the nodule were due to inflammatory deposit and not to normal tissue under abnormal conditions.

2. Fibrositic nodules contain a large amount of toxin, presumably streptococcal in type, which is set free in the circulation when the nodule is forcibly broken down. Therefore care must be taken as to the number of nodules broken down at any one sitting, otherwise a definite reaction may result, as is the case with vaccine treatment. A reaction due to this cause may occur in from twenty-four to forty-eight hours, and may last two days. It may be characterized by considerable malaise, and may even be accompanied by a rise in temperature to 100° F. or more. Pain, apart from any constitutional reaction, is a frequent result of the treatment, and under certain conditions its onset may be delayed for as much as forty-eight hours.

3. The breaking down of fibrositic nodules must therefore be regarded as a form of vaccine treatment, and its adoption must be regulated by the same principles as those which govern the injection of a vaccine. The number of nodules broken down at any one sitting must be limited so as not to produce a reaction. The frequency of the treatment must allow time for the cessation of the negative phase and for the establishment of the positive one. An interval of at least five days should therefore be allowed, and if possible seven days; neither more nor less. If advantage be thus taken of the positive phase more can be done at a sitting than would be desirable if a longer or a shorter interval were adopted.

4. The fibrositic nodules contain living micro-organisms, presumably streptococci, and not simply toxin. This is shown by the clinical observation that nodules which judging by their hardness and by the history of the case must have been in existence for many months or years are, when broken down, quite as liable to give rise to a reaction as nodules of more recent origin. It does not seem possible that such an amount of toxin could have remained stored up in a fibrous nodule for, say, a couple of years, and therefore the presence of living organisms in the nodules must be presumed.

5. The results of this manipulative treatment also throw some light upon the cause of the pain which so often occurs when fibrocytic nodules are present.

The treatment we are speaking of will in a few minutes relieve pain that has for many years accompanied certain movements of a joint, and pressure upon some painful spot has been the means of curing. Pain with such characteristics could not be due to the irritation of nervous tissues. Moreover, localized tenderness which can be made to disappear within a few minutes as the result of force applied to the tender spot cannot be of nervous origin. The results of this manipulative treatment, therefore, seem to prove that the pain to which fibrositic nodules give rise is due to strained muscular fibres, and not to irritation of sensory nerves.

The explanation of this pain is probably as follows. In the first place the nodule causes pain by the abnormal strain placed on the muscular fibres with which the nodule interferes. This irritation calls up protective fixation of the adjacent part of the muscle, and the widespread pain is due to this fixed portion of the muscle being stretched when certain movements are attempted. The fixation will be attained by means of static muscular activity. As soon as the nodule is broken up the need for this protective fixation ceases, and the muscle regains its normal mobility.

Relation of Fibrositic Thickenings to Rheumatoid Arthritis

If fibrositic cords and nodules are looked for in cases of chronic arthritis such as twenty years ago would have been included under the general term rheumatoid arthritis, it will often be found that they are very numerous, and that much of the pain which characterizes this type of ailment can be relieved by the destruction of these thickenings. In such cases it is often found that *pari passu* with the removal of the fibrositic nodules the general condition of the affected joints improves. On the other hand, a too vigorous adoption of this treatment appears in certain cases to cause a temporary deterioration in some of the joints—for example, in those of the hand—owing presumably to the liberation of an excess of toxin into the circulation. When the weight of the patient is carefully watched and the treatment regulated accordingly this deterioration is not likely to occur.

These clinical observations seem to suggest the possibility that the absorption of streptococcal toxin from these fibrositic nodules may play an important part in the causation of some of the conditions now called septic arthritis, osteo-arthritis, and rheumatoid arthritis.

Type of Manipulation Needed

FORCIBLY BREAKING UP A NODULE OR CORD

When the character of a cord or nodule is recognized it is clear that the object of manipulative treatment must be to burst the nodule by a sudden and very forcible pressure of the finger-tips, which is calculated to tear asunder the agglutinated fibres of which it consists. This can be done by combining a very rapid to-and-fro rolling movement with the pressure. This treatment can only be adopted effectively in situations where the cord

or nodule can be compressed against subjacent bone, and also where no structures occur, such as nerves or tendon sheaths, that might be damaged by the force used.

In this connexion it is of interest to note that fibrositic cords and nodules which give rise to pain are very often associated with the origin of muscles from bone, and are, therefore, in situations where this forcible treatment is capable of adoption. In the case of the erector spinae and associated muscles fibrositic cords lie in the sulcus between the vertebral spines and the angles of the ribs, and their compression against the laminae of the vertebrae is possible and safe.

The fact that fibrositic nodules are often associated with the point of origin of muscles from bone, and more especially from flat bones, must always be borne in mind when dealing with pain which is thought to be of a general rheumatic character. When there is pain in the hip a careful search along the line of origin of the gluteus maximus from the ilium just below its crest will often demonstrate the presence of tender spots, and the careful examination of a tender spot will make evident a small hard nodule of the size and shape of a grain of wheat, or smaller. There may be many such nodules along the edge of the gluteus maximus. Sudden forcible pressure of the kind just described will usually suffice to break up a nodule and cause its disappearance. After three or four small nodules have been destroyed the localized areas of tenderness will no longer be present, and the patient will find a definite lessening of the pain on movement. In the same way nodules may be found along the line where the infraspinatus muscle arises from the scapula, and their destruction will give the patient relief from pain.

Small nodules of this type may be found at the point of origin from bone of other muscles—for example, the adductor magnus, where it rises from the pubic bone, or the origin of the deltoid from clavicle or scapula. In the case of the deltoid, however, care must be used in the application of force on account of the risk of damaging tendon sheaths or nerves.

FIBROSITIC NODULES IN THE CENTRE OF A MUSCLE

Occasionally a large nodule may be found in the central portion of a muscle instead of at its origin or insertion. For instance, I have known a fibrositic nodule the size of a date stone occur in the vastus externus in the middle of the thigh and make the patient almost unable to walk. In a case of this kind considerable force is not desirable for fear of damaging subjacent nerves or veins ; also it is likely to prove ineffective since there is no hard surface against which the nodule can be compressed. Such a nodule can, however, be broken up by the rolling movement already described, apart from the use of any great force. The rolling pressure must be applied at either end of the date-stone-shaped nodule where the free fibres enter it. With a little patience the nodule can gradually be broken down by rolling the free fibres against one another at the point where they become agglutinated, and thus separating them from the mass and lessening its size. It may take twenty or thirty minutes' work, first at one pole and then at the other, to break down such a nodule, but where it is done the result may be most dramatic, and a patient who hobbled into one's consulting room hardly able to walk owing to the pain in his leg may run round the room exclaiming delightedly "Why, I am cured, I am cured!"—as a patient of mine once did.

When fibrositic nodules or cords occur in the intercostal spaces this gentle type of forcible breaking down is desirable. As a rule it is adequate ; also the nodules in this situation are extremely tender, and most patients cannot be asked to bear the pain which very forcible pressure would cause. These nodules may escape recognition unless they are definitely searched for, because the pain to which they give rise is usually felt as a referred pain over the abdomen and is therefore liable to be mistaken for a visceral pain. This subject will be discussed later when pain as a symptom of fibrositis is dealt with.

MECHANICAL TREATMENT IN VERY CHRONIC CASES

In cases where the thickenings have not been in existence more than a few months pressure by the finger-tips is adequate to destroy them. When, however, they have been in existence for several years they may be so hard that pressure with the finger-tips is not the most desirable way of dealing with them. This is especially true of the hard cords in connexion with the posterior spinal muscles, which can often be found lying on the vertebral laminae in the sulcus between the vertebral spines and the angles of the ribs. It is also true of the hard cords that may be felt on the iliac crest, more especially in the neighbourhood of the posterior superior spine and sometimes on the outer or the internal aspect of the anterior superior spine. Occasionally, also, very hard and very tender cords may be felt on the posterior part of the upper border of the scapula, at the medial angle, particularly on its inner aspect, and also sometimes in relation to the upper part of the posterior border of the scapula.

In all these situations the cords when very hard can be broken up with less pain to the patient by means of a sharp blow with a light wooden mallet. The localization of the blow to the cord to be dealt with can be ensured by using a properly shaped and padded piece of wood. The technique is as follows. In the first place the mallet must be of the right type. It must be made of light wood such as deal, and have a head measuring two and a half or three inches each way. The handle must be so thick that the point of balance of the mallet is where the handle joins the head. Such a balance makes it possible to give a sharp light blow and not a heavy one. To limit the force to the cord which has to be broken up, a piece of deal is used a quarter of an inch thick, three-quarters of an inch wide, and of sufficient length for a stout elastic band to be stretched round it to act as a pad. The lower end of the piece of wood must have a slight longitudinal groove, deep enough to make it hold the cord when it is placed over one, but not so deep that it will protect a cord of under an eighth of an inch in diameter from the force of the blow. The cord is now carefully held between the first and second fingers of the left hand. With the right hand the piece of wood is slipped between the two fingers so that it rests accurately on the cord, and the groove will ensure that the cord does not slip from under it. The mallet is then picked up and a sharp blow delivered on the top of the piece of wood.

It is very important that the blow should be adequate to break up the cord, but not so strong as to bruise the periosteum. The only way to learn how strong the blow should be is for the operator to experiment upon himself with the mallet and the piece of wood ; and the crest of his own ilium is a suitable situation. A very forcible blow will not only be definitely painful at the time, but may leave a bruise which will be tender afterwards. Such an amount of force is not necessary and is undesirable.

Although this method of dealing with fibrositic thickenings may seem somewhat rough, it is in practice preferable to what seems a gentler method when fibrositic cords are very hard. When both methods have been tried in a case of long-standing pain the patient (even though a lady) will ask that the mallet be used rather than the finger-tips.

An Important Practical Point

When a fibrositic cord has been successfully broken down it will be found that the sensation of a smooth cord slipping to and fro under the finger-tip can no

longer be felt, and that instead there will be a sensation of grating where the cord used to be, or, if the cord was a thick one, the sensation of grating may be felt to be due to three or more small hard cords slipping over one another as the finger is moved to and fro. This is evidence that the complete destruction of the cord may be attained in ten minutes or less by continuing the same type of movement of the finger-tips, but with only an amount of force which will not be definitely painful for the patient. The fact that this sensation of grating under the finger-tip usually precedes the final disappearance of a fibrositic cord shows that such a cord is an agglutination of separable fibres.

If a fibrositic cord is two or three inches long—this may well be the case where the erector spinae and its associated muscles are concerned—it is very satisfactory to be able to feel a definite gap in the cord of more than half an inch in length after the forcible rolling pressure already described has been applied. Sometimes, however, much force may be necessary before this result is attained by pressure with the finger-tips.

In one such case the patient, aged 69, had never been free from pain in her back and shoulders for six or seven years; this was the more trying as she was living in an almshouse and had to look after herself. It is always advisable in cases in which there are many fibrositic thickenings to begin with a situation like the shoulders or the hips, where definite relief of pain can be given by the use of a moderate amount of force and the infliction of no very severe pain upon the patient. The patient then comes to realize the efficacy of the treatment, and is prepared to suffer the more severe pain which the breaking up of hard nodules may occasion. In the present case, after five or six treatments, the relief was so great that the patient was willing that I should do everything that was necessary. There was an extremely hard cord on either side of the spine in the lower dorsal region more than three inches long, and moderate force did not suffice to break it up. It was not until I knelt upon the couch and exerted all the force that I could bring to bear upon my finger-tips that I succeeded in making a definite gap in the cord. I did not succeed in completely destroying both the lateral cords until I had used this extreme amount of force on three or four occasions. The relief from pain which each treatment gave was, however, most gratifying to the patient. Twelve weekly treatments were required before she was able to state that she was free from all pain in the back and shoulders for the first time for nearly seven years. As is usual in such cases, there was no return of the pain after the destruction of the fibrositic cords associated with the scapulae and the spine, and after the lapse of more than a year she has remained quite free from any fibrositic pain.

This case was treated before I had thought of breaking up cords by the blow of a mallet, and doubtless the treatment would have been less painful for the patient and less prolonged if I had adopted this method.

Pain as a Symptom of Fibrositis

There are some very interesting features in connexion with the pain which is due to nodular fibrositis, and which ceases when the nodules are broken up. Where there are fibrositic cords on the upper border of the scapula at or near the medial angle the patient often suffers from pain that is spoken of as a headache involving the back of the neck and the occipital region on one or both sides. This is especially true of cords which occur so much on the inner aspect of the medial angle that the finger-tips cannot reach them unless the patient forces the scapula away from the ribs by lying on that shoulder. In this attitude the finger-tips can be got round to the anterior aspect of this part of the scapula, and the cords felt and broken up. Cords in this situation may be associated with neuralgic pains in the side of the neck below the ear, along the upper jaw, or even higher up under the eye: I have met a case in which the pain caused by the treatment was felt under the eye as well as at the site of the cord at the medial angle of the scapula.

The pain occasioned on movement by fibrositic cords and nodules in other parts of the scapula is such as might be expected to occur considering their situation and the muscles involved. The same is true of fibrositic cords and nodules in the neighbourhood of the iliac bones and those involving the erector spinae.

Some very unexpected and interesting symptoms are observed in the case of thickenings in the intercostal spaces. For instance, nodules in the sixth left intercostal space may give rise to pain in the situation described as "under the heart" which may be mistaken for cardiac pain. Fibrositis in the right axilla in the fifth to the seventh interspaces may cause epigastric pain simulating that due to duodenal ulcer owing to the irregular times at which the attacks come on, and for a similar reason fibrositic nodules in the interspaces from the eighth to the eleventh may occasion attacks of pain felt over the abdomen which may be mistaken both by physician and by patient for pain arising in the colon or in the appendix.

There is a most unexpected difference between the symptoms characterizing fibrositic nodules found in the intercostal spaces and those found in such situations as the shoulder, hips, or back. In these last-named situations the pain is associated with movement to a very large extent, whereas in the intercostal muscles and fibrous tissue the determining factor for the occurrence of pain is predominantly the excitability of the nervous mechanism involved in its production.

Relation between Symptoms and Nervous Excitability

Under certain conditions the occurrence of some particular symptom may be determined by the excitability of the nervous mechanism instead of by circumstances connected with the pathological condition to which the symptom is due. This law relating to the causation of symptoms does not seem to have as much prominence in medical literature as it deserves, and two illustrations of it which bear upon the present subject may therefore be given. They are taken from my book *Tonic Hardening of the Colon*,* in which I refer to the fact that abnormal muscular activity in the colon may so increase the excitability of the central nervous system as to make the time of occurrence of symptoms of various kinds dependent upon the periods when functional activity of the colon takes place. The time of greatest muscular activity of the colon seems to be between the hours of midnight and 4 a.m., and one sometimes meets cases in which the occurrence of symptoms (the latter may be wholly unconnected with the colon) is almost or entirely limited to these hours of colon activity.

In my book I record the case of a woman, aged 55, who for two years had suffered occasionally from attacks suggestive of Ménière's symptom complex. Although a certain amount of vertigo was elicited during the day by sudden movements of the head, the severe attacks only occurred between one and two o'clock in the morning. An attack was often ushered in by "noises in the head," and would be followed by tremor severe enough to awaken her husband by the shaking of the bed. The attack was characterized by coldness, by extreme faintness, and often by unconsciousness lasting for some minutes. Towards the end vomiting often occurred, and after she had recovered consciousness there would be considerable breathlessness. On examination the colon was found to be abnormally hard and tender. The case was clearly one of "static" hardening of the colon, although there were no abdominal symptoms except a little gastric fullness. She was cured in a few weeks by the ordinary

* *Tonic Hardening of the Colon*, pp. 31, 147, and 148. Oxford Medical Publications.

treatment for this condition—namely, salol 10 grains, tinct. hyoscyam. 20 minims, thrice daily, together with the usual limitation of diet so far as vegetables were concerned. Another interesting point about the case was that after recovery the patient's labyrinthine symptoms all subsided, and there was no need for any aural treatment.

In the following case the time of occurrence of neuralgic pain in the right forearm and hand of median and ulnar nerve distribution was determined by the excitability of the sensory mechanism when irritated by abnormal muscular activity in the colon. The patient had no neuralgic pain by day, but for some weeks past had been awakened each night soon after midnight by severe neuralgia, and he would "walk up and down the bedroom in agony" until the pain gradually subsided and he was able to go to sleep again. This man had "static" hardening of the colon, and he was immediately cured of his neuralgia by the same colon treatment that had cured him twelve months before when suffering from severe mental depression, with suicidal tendencies, of colon origin. The remedy used was tinct. hyoscyam. 20 minims, liq. hydrarg. perchlor. 15 minims, tinct. ferri perchlor. 15 minims, with some glycerin and chloroform water taken when the stomach was empty a quarter of an hour before meal times, thrice daily. On the second night after commencing this medicine (which was taken in conjunction with the usual dietetic limitations) he was free from his nocturnal neuralgia, and had no return of it.

In both these cases it must have been the over-excitability of the sensory mechanism in the small hours of the morning which made possible the occurrence of some symptom only at that time out of the twenty-four hours. In the case of the pain due to intercostal fibrositis, the time of occurrence appears to be in some measure determined by over-sensitiveness of some reflex centre which is situated in the spinal cord and not the brain.

Fibrositic Pain Simulating that Due to Duodenal Ulcer

The best way to introduce this subject to those who read this communication will be to record the case which first brought it to my notice in December, 1934. The symptom is, I believe, a very important one clinically, and but few, if any, observations appear to have been made upon it.

A man, aged 47, had been seen by me several times during the last two years, in consultation with his doctor, for severe abdominal pain due to duodenal ulcer, but in which "static" hardening of the colon at times played a considerable part. After being comparatively free from pain for a time he began having very severe and intractible attacks of his "old pain" in the autumn of 1934. He was therefore admitted to the Birmingham General Hospital to see if some surgical procedure could give relief. However, after a most thorough and complete study of the abdominal condition, it was decided that no operative procedure was desirable.

As the pain was not amenable to any ordinary treatment it seemed possible that it might be due to fibrositis, in spite of the fact that the time of its occurrence appeared to be related to times of digestive activity rather than to movement. On examination it was found that there were very tender fibrositic nodules in the right axilla situated in the fourth, fifth, and sixth interspaces, and that forcible treatment of these occasioned pain over the right side of the epigastrium. At first the treatment was tentative. At the third visit, however, very considerable force was used, and as a result the patient had an extremely severe attack of epigastric pain commencing at 6 o'clock on the evening of the second day, and he suffered so much that at 10 p.m. he tried the effect of a large poultice to the right side of the epigastrium. The next day he had a slight attack of pain in the evening, but during the four following days he was more free from pain than he had been for many weeks.

At the next visit manipulation was confined to the sixth intercostal space high up in the axilla, and the patient was asked to mark out with an aniline pencil the area over which any subsequent pain occurred. He had a moderately severe attack of pain twenty-four hours after the treatment, and the area he had enclosed with a blue line was exactly the skin area related to the sixth intercostal nerve. After only six or seven treatments he was free from the epigastric pain from which he had been suffering severely for several months.

Fibrositic Pain Simulating Cardiac Pain

It has already been stated that fibrositic nodules in the sixth left intercostal space may give rise to severe pain "under the heart," which is sometimes definitely associated with overtaxed cardiac activity. Moreover, the fact that in such a case the pain may prevent the patient from sleeping on the left side is almost certain to be regarded as a cardiac symptom and not a fibrositic one.

Fibrositic Pain Simulating Colic or Appendix Pain

When fibrositic nodules occur in the lower intercostal spaces from the eighth to the eleventh, although they may give rise to pain on movement in that situation, they are very liable to cause only "referred pain" over the "skin area" of the abdomen which is in relation to the intercostal nerve concerned. As pain of visceral origin also obeys the same law and is felt over the skin area which is in relation to the segment of the cord receiving the irritating nervous impulse from the bowel, a pain of fibrositic origin may be quite indistinguishable from one of visceral origin. The similarity is increased by the fact that the time of occurrence of fibrositic pain appears to be largely determined by any increase in the excitability of the segment of the spinal cord concerned, owing to the reception by it of disturbing impulses from the bowel.

Clinically, fibrositic pains felt over the abdomen do occur at times of activity of the bowel just as is the case with pain of visceral origin. There is therefore good reason for the fact that until quite recently fibrositic nodules in the lower intercostal spaces have not been recognized as a possible cause for what appears to be visceral pain. For instance, fibrositic nodules in the tenth or the eleventh right interspaces will give rise to occasional attacks of severe pain in the two situations that are considered characteristic of appendix pain—namely, a little to the right of and below the umbilicus, or an area two inches or so in diameter in the right iliac fossa. In such cases the differential diagnosis must sometimes depend upon the presence of tender nodules in the intercostal spaces and the fact that pressure upon them will cause either an immediate reference of pain to the abdomen or an attack of pain, the onset of which may be delayed for some hours or even for a day or two.

Something may well be said here as to a simple clinical method whereby referred pains can be distinguished from pain of direct visceral origin. This method depends upon the fact that the occurrence of referred pain in the skin area which is associated with one of the intercostal nerves is almost invariably accompanied by tenderness of the subcutaneous branches of the nerve concerned. When, therefore, the branches of the subcutaneous nerves are tender on pressure it is evidence that the pain is a referred one and not a visceral one. In the former case hardening of the muscles of the abdominal wall (by making the patient contract them) will greatly increase the pain given by pressure upon the hyperaesthetic nerve trunks, whereas if the tenderness be of direct visceral origin the hardening of the abdominal wall will prevent the pressure of the fingers from reaching the organ concerned and tenderness on pressure will no longer be obtainable. Thus a patient has tenderness over an area of the stomach just above the level of the umbilicus. While gently pressing upon the tender area the patient is told to lift both heels from the bed and thereby to contract the muscles of the anterior abdominal wall. This action will make it impossible to elicit pain on pressure if the stomach for some reason be

unduly tender, but if the pain be a referred one the tenderness on pressure will be greatly intensified. As the stomach is not in relation with intercostal nerves lower than the seventh, referred pain felt in the region of the umbilicus—namely, in an area supplied by the eighth and ninth intercostal nerves—cannot be of gastric origin, and is probably due to the colon. In this way pain after meals may be proved to be due to " static " hardening of the colon and not to gastric disturbance.

A Clinical Problem

A case seen as recently as May 11th, 1935, raises a very interesting point as to the connexion between fibrositis and persistent contraction of the fingers.

A manual worker four years ago had a very severe attack of rheumatism, which confined him to bed for many weeks and prevented him from working for fifteen months. It left him not only with troublesome pain in both shoulders on movement, but also with contraction of the fingers, more especially of the third and fourth, which, while not materially interfering with his daily work, prevented him from bringing the ulnar aspect of the palm within three-quarters of an inch of any flat surface. He gained so much relief from the pain by manipulative treatment of the upper border of the scapula and the supraspinous fossa on the right side that he desired similar treatment to the left shoulder. As the fibrositic cords were very hard owing to the long time they had been in existence, I began the treatment with extremely forcible manipulation. He was so anxious to be free from pain that he at once requested a repetition of the treatment, as the first had not given full relief, and on this occasion he exclaimed that it " has loosened something and the pain has shot down the arm into the third and fourth fingers." After he had dressed I found that the contraction of the fingers of the left hand was completely cured, and no trace of it remained. Moreover, on fully extending his fingers and flexing them, as he could now do with perfect ease and without any pain, there was a very loud and low-toned grating in the joints of the hand as well as one or two bony clicks. In the course of four or five days the condition of the joints had nearly returned to normal, for the grating on movement had ceased and there were only a few clicks.

This was a most extraordinary and unexpected result of the treatment, and perhaps the most remarkable thing was that in spite of four years' deformity of the hand there was no trace of fibrous fixation of the joints, and perfect mobility was restored immediately when the muscular contraction, to which the deformity had clearly been due, suddenly ceased.

The correct solution of this problem is no doubt of clinical importance, for it will throw much light on the question of similar contractures. I state what seems to be the possible solution, in the expectation that someone with more experience than myself will give the correct one. There is the possibility of further experiment in this case, for the man's right hand is still contracted, and I have not yet had an opportunity of trying to cure it also by manipulation of the scapular region.

1. In the first place, what was the nature of the deformity of the hand? The fact that sudden and complete cessation of the contraction resulted from manipulation of the shoulder without anything whatever being done to the hand shows that the contraction must have been entirely due to involuntary muscular action, in spite of its persistence for four years.

2. The muscular contraction may have been of the nature of a protective muscular fixation of the joints, which was originated when the rheumatic attack gave rise to pain on movement. The muscular fixation must have persisted as a habit phenomenon after recovery from the rheumatic attack, as is liable to occur when protective involuntary muscular fixation of a joint is once originated. Lasting fixation of intervertebral joints after some slight strain or injury is a well-known instance of this.

3. The involuntary muscular contraction may, however, have been due to disturbance of some controlling mechanism by a fibrositic nodule, which could irritate one of the cords of the brachial plexus or some sympathetic nervous structure. Such a nodule might have been broken up by direct pressure of the fingers just above the upper margin of the scapula, or it may have been broken up when the scapula was forcibly pressed against the subjacent ribs. These are some of the problems raised by this interesting case.

This whole subject of the symptoms due to fibrositic nodules and their relief by forcible breaking up of the nodules is one of much clinical importance, and will repay fuller study and observation.

A NEW TREATMENT OF FIBROSITIS

BY

G. LAUGHTON SCOTT, B.A., M.R.C.S.

FORMERLY SENIOR PHYSICIAN, LONDON NEUROLOGICAL CLINIC

Fibrositis is the commonest of those chronic conditions which we call rheumatic. Throughout the world its incidence is widespread, and in such a climate as our own it is rare to find the man who lives to old age without some temporary disablement and far from temporary discomfort from this cause. Yet only in the last twenty years has its existence been at all commonly recognized, and even now it is far too readily accepted as an inevitable accompaniment of advancing years.

Pathogenesis

Fibrositis denotes the swelling and proliferation of white fibrous tissue in response to injury and toxic influences of all kinds, with the secondary effects of pressure on arterioles and nerve filaments. In rheumatic cases it is generally recognized that the condition must have its prime origin in some focus of infection, which it is the first principle of sound therapy to treat or to remove. Often the extraction of an offending tooth will cause the local inflammation to subside, but with long-standing cases it is common to meet those which are unbenefited by the most careful elimination of suspected sources of infection. Those who find in the focal theory the complete explanation of rheumatic problems will argue that, when cure does not result in any given case, the focus removed was not the right focus and others must be sought and dealt with. But how frequently in really inveterate cases is the final result disappointing!

The physician who remembers his failures will be able to match from his own experience the case of a young woman under my care some years ago, who made an apparently complete recovery from crippling fibrositis after the removal of all her more than doubtful teeth. Six months afterwards the pain and disability returned in full force, and no efforts to help her were of any avail, nor did the most exhaustive search reveal any further focus. Later treatment at other hands proved equally unprofitable.

Inadequacy of the Focal Theory

So distressing a failure must tend to raise in the physician's mind some doubt of his own methods, and perhaps even the suspicion that the focal theory leaves something unexplained. It did not explain, for instance, a phenomenon observed in this case—namely, that the application of deep massage was always followed by malaise and a slight rise of the evening temperature,

which disappeared when massage was discontinued. Having discovered this in one case, it was natural to look for it in others, and I found that evidence of systemic reaction was quite common when an acute fibrositic area was thus mechanically irritated. The same result may also be observed if the irritation is of a chemical nature, as when lipiodol is injected into the fibrositic patch, after the manner of Forestier. The therapeutic benefits of such measures have been shown by Forestier, but I can trace no reference in his works to this fairly constant systemic disturbance.

The finding that under certain conditions of irritation the fibrositic nodule apparently introduces toxic material into the circulation when the original focus of infection has long been removed must suggest that it has itself become a focus, secondary to the infecting focus, but needing no reinforcement for its effective existence. It can hardly be a case of its storing up the toxins of the original focus for long periods of time ; it must be making its own toxins and, in fact, be harbouring low-grade organisms capable of independent saprophytic life. This resembles the state of things described by the theory of subinfection which, however, postulates the continual arrival of organisms from a distance and not their self-sufficient life within an affected tissue.

Lipovaccine Therapy

If such a conception be dismissed as mere conjecture, it may be found difficult to explain a phenomenon which appeared when local treatment was instituted to raise the local resistance of the attacked muscle and to eliminate the fibrositic mass. An oil-suspended vaccine, prepared by the addition of dried streptococcal substance to olive oil, was injected into the inflamed tissue. Within a few hours the area became hot and tender, and the same malaise and evening pyrexia, but both more marked, occurred as when massage was applied or lipiodol injected. At the end of a few days all symptoms abruptly subsided, leaving the fibrositic area comparatively painless and no longer obvious to the fingers. Accompanying this local change a most marked gain in general health was often observed. Persons who had been in poor condition for years regained their normal colour and appearance in a week or two, and recovered a vigour and activity they had been resigned to losing. Not all were so fortunate, for the marked general—as distinct from the local—improvement was only seen in patients under the age of 50, and only when the fibrositis was of great severity and long standing. When it did occur, as in perhaps half the cases, the change was exceedingly remarkable. It was not forthcoming when the oil was injected into healthy muscle, or into a fibrositic area in which the inflammation was slight.

The lipovaccine, prepared by the Pickett-Thomson Research Laboratories, St. Paul's Hospital, London, was made up in two strengths, representing one and ten million organisms (polyvalent streptococci isolated from rheumatic cases) suspended in sterile olive oil. A mild antiseptic action was secured by the addition of an oil-soluble antiseptic (1 per cent. gomenol proving satisfactory). The oil was injected deep into the fibrositic area, and was distributed throughout it by moving the needle from place to place. As much as 10 c.cm. of the stronger concentration was used at one sitting.

The following cases merit description.

1. A woman, aged 41, had for many years suffered from intense occipital headaches, so severe that cerebral tumour had been suspected. The general health was very low. There were large intensely painful fibrositic masses below each occiput, and the whole neck was involved. She had had discontinuous treatment for some years, massage, diathermy, and strict dietary for three months having been without benefit. On two successive days lipovaccine was injected suboccipitally and elsewhere. A week later the headaches had disappeared, the colour was much better, and very soon she resumed her full activities. Six weeks later the general improvement was most remarkable, and after nearly three years she remains in all respects well.

2. A man, aged 48, was treated by me in 1919 for nervous debility and "exhaustion in the back." This symptom never yielded, and in 1933 there was extensive lumbar and gluteal fibrositis with some neurasthenia. After four injections at weekly intervals he became completely well, though the first two injections caused no general benefit. After the third one the colour improved, and he became much more active ; though always highly strung, his nervous condition was greatly ameliorated. Six months later he reported that the improvement had been maintained.

3. A man, aged 62, developed lumbago three years ago. A very thorough search for septic foci seems to have been made with negative findings other than several doubtful teeth, which were removed. A year ago he had a protracted course of treatment by protein shock, which benefited him, but he could not move without pain and had to give up golf. There was marked fibrositis in the lumbar region and in both buttocks. Injection treatment was only undertaken on the understanding that he should undergo a strict dietetic regime, for it was obvious that marked abdominal toxaemia was present. After seven injections he was able to play golf freely without pain, and six weeks after the first one he reported as his only symptom "feeling a little stiff after a day's exercise, but this passes off in the night." The patient was so pleased with the result that he refused dietetic treatment. Although at the end of six months he remains well, the injection treatment should not have been undertaken if it had meant the neglect of obviously necessary dietetic measures.

These three cases are selected from a series of twenty-five of intractable fibrositis treated during the last three years to exemplify the phenomenon of marked and sometimes dramatic benefit to the general health. It is puzzling to account for this last feature, unless one admits that the fibrositic mass may eventually itself become a source of infection, the removal of which eliminates an actual cause of ill-health as well as a cause of local pain. One would have to assume that the local reaction to the lipovaccine produces a specific local immunity sufficient, in successful cases, to destroy the invader *in situ*.

Apart from systemic benefit and from conjectures as to its meaning, the injection of lipovaccine caused a more or less complete disappearance of the local disability in eighteen cases out of twenty-five, a partial improvement in three, and no result in four cases. The last group contained two persons over the age of 60, and two in whom very chronic lumbago was associated with old scoliosis. Almost every patient had suffered for more than ten years.

The second International Congress of Microbiology will be held in London from July 25th to August 1st, under the presidency of Professor J. C. G. Ledingham. The congress will be officially opened on Saturday evening, July 25th, at University College, Gower Street, London, the headquarters of the congress. The programme, as provisionally arranged, is divided into eight sections as follows: general biology of micro-organisms ; viruses and virus diseases in animals and plants ; bacteria and fungi in relation to disease in man, animal, and plants ; economic bacteriology, soil, dairying, and industrial microbiology ; medical, veterinary, and agricultural zoology and parasitology ; serology and immunochemistry ; microbiological chemistry ; specific immunization in the control of human and animal disease. The hon. general secretary of the congress is Dr. R. St. John-Brooks (Lister Institute of Preventive Medicine, Chelsea Bridge Road, London, S.W.1).

FEMORAL OSTEOTOMY IN TREATMENT OF OSTEO-ARTHRITIS OF THE HIP*

BY

S. A. S. MALKIN, M.B., B.S.LOND., F.R.C.S.ED.

SURGEON IN CHARGE, HARLOW WOOD ORTHOPAEDIC HOSPITAL, NOTTINGHAM

Osteo-arthritis of the hip has been the subject of many discussions recorded in surgical literature. It engaged the attention of the Orthopaedic Section of the British Medical Association at the meetings in 1932 and 1933, and it is once more included in the programme. It is receiving so much prominence because it is, to the patient, a very distressing condition, and, to the surgeon, a subject about the treatment of which divergencies of opinion exist.

The most recent papers by British surgeons are those of Max Page,[1] Rowley Bristow,[2] and T. P. McMurray,[3] who have all collected results of treatment, and deal chiefly with advanced cases, stating definite conclusions. Max Page considers that, for the monarticular type, arthrodesis is the operation of choice, but if both hips are involved, or if the lumbar spine is stiff and the seat of arthritis, a remodelling operation should be chosen.

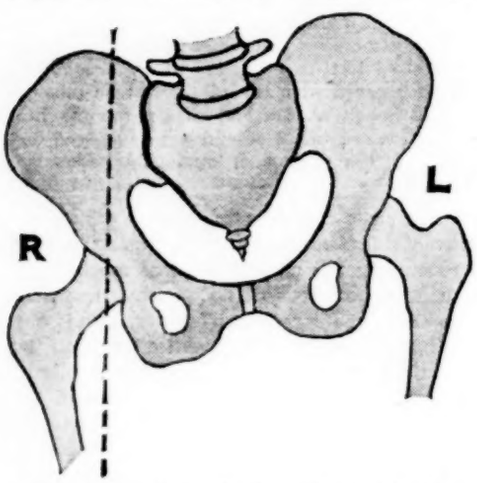


FIG. 1.—Showing position of pelvis when weight is carried by right leg.

In the sixty-nine cases he reports in which a fixed joint was aimed at this was obtained only in forty-six cases. Rowley Bristow agrees that, for the monarticular type an arthrodesis should be performed, using arthroplasties for bilateral cases and for cases in which the knee is stiff as well as the hip. McMurray reports that in a series of cases of monarticular arthritis he has performed a Lorenz bifurcation operation. He states that in twelve out of fifteen cases the results were very satisfactory.

For the advanced monarticular case which has reached the stage when it is felt that rest and physiotherapeutic and other non-operative measures have proved ineffective or are contraindicated we have, therefore, Max Page and Rowley Bristow advocating an arthrodesis, but McMurray recommending the Lorenz bifurcation operation.

It is my object to report a short series of advanced cases in which a simple femoral osteotomy has been performed and proved effective. This operation is mentioned by both Page and Bristow, and was advised for certain cases by the president of this Section, Professor Hey Groves,[4] in his paper at the British Medical Association Centenary Meeting in 1932.

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Melbourne, 1935.

The Single Arthritic Hip

The problem of the single arthritic hip is primarily one of pain. Patients come for advice usually not because of deformity but because of pain, and it is therefore of the first importance in treating the condition to know as far as possible exactly how and why the pain occurs. Max Page thinks that the pain most in evidence in the early stages of the disease may be due to irritation of the nerves underlying the articular cartilage, and that this passes off when the articular cartilage has become completely eroded and the underlying bone sclerosed. This seems to agree with clinical experience.

If this is so, this pain may be excluded or at least regarded as of less importance in considering the later cases. Elmslie,[5] in reviewing the aetiology of the condition, summarizes his conclusions by saying that the factors concerned in the production of the condition may be classified as traumatic, mechanical, toxic, and local disease of the articular ends of the bone. He states that when once the degenerative changes have started alterations occur, entering into the articulation, so that whatever the original cause an additional mechanical factor is thus induced. Whatever the cause of the condition in the first instance—and it will be agreed that in most cases

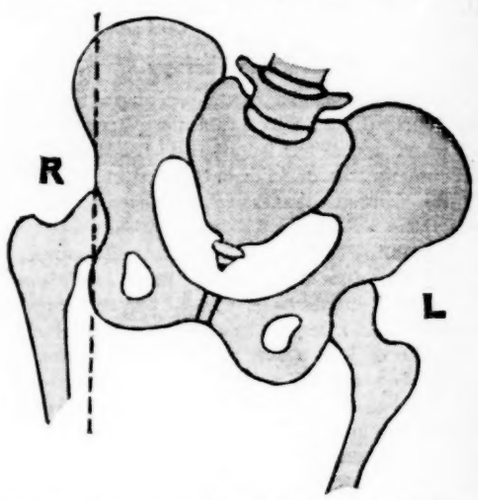


FIG. 2.—Showing position when weight is borne on adducted hip.

there is either a traumatic basis or that traumata are superadded—there is no doubt that the final result is a disparity between the two bony components of the joint. As a consequence, faulty mechanics induce a strain mostly taken by the inelastic fibrous structures surrounding the joint, and result in producing muscular spasm, which increases and maintains the deformed position. It will be accepted that in patients who seek advice on account of pain, in practically all advanced cases deformity of the affected hip is present, the three most marked deformities being adduction, external rotation, and flexion. In some the adduction, in some the flexion, and in some the external rotation is the most prominent. It is to the cases in which deformity, more or less marked, is present that my observations chiefly refer.

What happens to the normal hip in walking? As the leg is carried forward in taking a step the hip is first flexed, adducted, and externally rotated and extended. The longer the step the more these movements are intensified. At the time when the leg is carrying the maximum weight it is abducted and slightly internally rotated. It follows, therefore, that a hip which will not abduct and is held externally rotated must be strained at each step, and that the strain must be borne by structures not designed for the purpose. That this contention is correct is generally admitted, and it is supported

by radiographs which, in many cases, show clearly that it is impossible, on account of deformity, for the bones to make the normal movements of walking, and that they can take, therefore, only a proportion of the body weight, the remainder of which must be borne by the edge of the acetabulum and the capsule, and the muscles surrounding it. Indeed, without the support of this capsule and of the muscles subluxation of the hip would occur. This must cause pain—a pain which is largely a question of faulty mechanism.

Now it is quite clear that, if any joint is arthrodesed in a good functional position, pain in that joint will be eliminated, but only by sacrificing any movement which is present and by calling on adjacent joints to make more than their normal movements. This, in fact, is what happens when a hip is arthrodesed.

Simple Trochanteric Osteotomy

Now an apparently useful range of movement, if in the wrong position or plane, may be useless or indeed a source of weakness. But it is in accordance with sound orthopaedic principles to correct faulty mechanics and if possible to utilize this movement by altering its plane. I think that in some cases of the specified type of monarticular arthritis of the hip this can be done by the use of a simple trochanteric osteotomy. In the presence of a fibrous ankylosis the operation is of equal value as the cause of pain in these cases also is largely a matter of faulty mechanics. By means of the osteotomy the thigh can be abducted and, if necessary, internally rotated and the hip realigned, thus enabling the acetabulum and the head of the femur to take the body weight in a normal way.

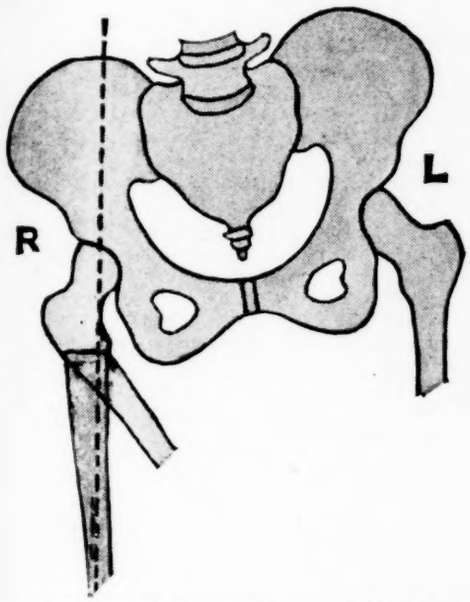


FIG. 3.—Correction of alignment by means of an osteotomy.

The operation is simple. Through a six-inch incision on the outer side of the thigh, beginning at the level of the great trochanter, the femur is divided at the level of, or just below, the small trochanter. If the main deformity is adduction, the bone is divided in a plane slightly oblique from without, downwards and inwards. If necessary the adductors are tenotomized. The limb is then placed in the abducted position. When the main deformity is external rotation, the division of the bone is transverse with no obliquity, the shaft being then rotated the required amount. After the bone has been inspected and it is seen to be in the correct position, the wound is closed and the patient placed on a Jones abduction frame. Radiographs are taken the following day, and the position adjusted if necessary. If union is taking place satisfactorily after eight weeks a long plaster spica is applied and the patient allowed to walk. This spica is retained for three or four months. In some cases a plaster spica is used from the commencement.

Results of Operation

In the Harlow Wood Orthopaedic Hospital this operation has been performed fourteen times during the last few years without any mortality and practically without any appreciable operative or post-operative anxiety. Two of the patients died several months later on account of other conditions, and are therefore not included in the table which has been prepared. The results so far have been satisfactory. In all there has been a reduction and in most cases entire elimination of pain, though four of the cases have not been done long enough to assess the real value of the operation. The first eight patients have all returned to work, and some of them to laborious occupations.

Femoral Osteotomy for Osteo-arthritis of Hip. Analysis of Cases

Sex	Age	Hip	Deformity	Date of Operation	Result
F	39	R.	25° Adduction, 60° Flexion	4/2/32	Walking well. Occasional pain. Full work
F	48	R.	40° Flexion, 15° Adduction, 20° External rotation	25/2/32	Occasional pain, but does full work at hosiery factory
F	65	R.	Flexion and adduction	23/3/33	Walking well. No pain
M	58	L.	45° Flexion, 1 in. Shortening	17/10/33	Walking well. No pain. Full work
M	57	L.	50° Adduction	9/1/34	Walking well. No pain
M	60	R. & L., operation on L.	20° External rotation (L.)	18/6/34	Walking well. No pain
M	64	R.	External rotation	21/6/34	Walking well. No pain
M	52	R.	50° Flexion 30° External rotation	19/7/34	Walking well. No pain. Full work
F	58	R.	Adduction, 45° Flexion, 3½ in. Apparent shortening	11/10/34	Walking fairly well with stick. (Had not walked for 3 years)
F	46	R.	75° Flexion	13/11/34	Too early to give result. Not seen since removal of plaster
F	33	R.	30° Flexion, 45° External rotation	11/12/34	Too early to give final result. Walking well. No pain
F	58	R.	45° External rotation	20/12/34	Too early to give final result. Walking well. No pain

I know that my series is too small and the period of observation too short definitely to determine the permanent value of the operation. It is, however, now more than three and a half years since the operation on the first two cases, and they still seem quite satisfactory. It is true that they have had occasional pain, but this I attribute to the spine and not to the hip. They are doing full work.

Conclusions

1. In advanced cases of monarticular osteo-arthritis of certain types pain is largely a matter of faulty mechanics.

2. By correcting the deformity and realigning the femur the mechanical strain on the joint and pain may be eliminated.

3. The simplest method of achieving this, and the method with least operative risk, is the femoral osteotomy. This will preserve any useful movement which is present in the joint.

The subject has been brought forward because it is felt that the operation described, though not new, has rather been neglected in the past. It is a useful addition to the methods generally advocated, and may, indeed, in certain cases, with advantage be used in their place.

REFERENCES

[1] Page, C. Max: *Lancet*, 1935, i, 1313.
[2] Bristow, W. R.: *Ann. of Surg.*, 1934, c, 1043.
[3] McMurray, T. P.: *Brit. Journ. Surg.*, 1935, cxxii, 88.
[4] Hey Groves, E. W.: *British Medical Journal*, 1933, i, 3.
[5] Elmslie, R. C.: Ibid., 1933, i, 1.

OSTEO-ARTHRITIS OF HIP AND KNEE

DESCRIPTION OF A SURGICAL TREATMENT *

BY

J. FORBES MACKENZIE, M.B.MELB., F.R.A.C.S.

SURGEON TO ST. VINCENT'S HOSPITAL, MELBOURNE

In dealing with this subject I shall largely confine myself to the description of a certain line of treatment which I have adopted in these cases, and in matters of classification shall largely be guided by the eminently sane and admirable classifications drawn up by the British Medical Association Committee on Arthritis.[1]

Importance of the Bony Change

I have long held that the changes in osteo-arthritis as known, and changes in bone and joint found in the condition described as rheumatoid arthritis, have many features in common, and tend to blend, or at any rate present, all grades of similarity. (This statement has some support from Lawford Knaggs[2] in his report on the Strangeways Collection.) This means that I take the view that the manifestations of the two conditions are more or less similar, and that the disease is essentially the same in origin, and that variations are due to age influence and varying tissue resistance. In addition to this, the same treatment has in my hands benefited both types of case.

My second viewpoint is that from the first, in dealing with these cases by the method adopted by me during the past five years, I have been impressed by the gross pathological changes found in the bone, and have definitely come to the conclusion that all conditions classified as osteo-arthritis or rheumatoid arthritis are the result of a primary osteitis, and that arthritic changes are secondary. That is, that anything which happens to the joint is the result of something that has happened to the bone.

It has become traditional to describe the fine detailed changes that have occurred in the articular cartilages of the joint affected, dismissing the bony changes rather briefly. Radiological investigation has to some extent altered this, although not, in my opinion, stressing sufficiently the importance of the bony change.[4]

Deliberate Opening of Bones as a Treatment for Osteo-arthritis

This operative procedure, adopted by me as a treatment in all cases of osteo-arthritis and rheumatoid arthritis indifferently, is that which I reported in the *Medical Journal of Australia* on April 11th, 1931, describing the good result of an experimental opening of bones in a lad of 19 years of age. In the same journal (December 3rd, 1932, p. 690) a detailed report was made of methods, changes noted in bone, and more particularly in bone marrow.[3]

Origin of the Procedure.—A lady aged 59, for fifteen years the subject of rheumatoid arthritis, affecting hips, knees, wrists, fingers, in fact almost every joint—barely able to move, but not bed-ridden—in trying to be useful fell and fractured the neck of her left femur in October, 1929; the fracture was an extracapsular one, and a large piece of the trochanter was detached. Owing to pain and deformity no attempt in the way of fixation was made; the thigh flexed in abduction was elevated on pillows, comfort being the only objective. This patient reported very early that she was losing her old rheumatoid pains, and finally said that she had practically none. She required no sedative. A light plaster splint was applied and the patient returned home. The future progress was most interesting—freedom from pain, no sign of recurrence, improved health evidenced by loss of an extreme anaemia, and improved function, not only of hands and limbs, but even the clearing up of an old iritis. This lady became most useful; she goes everywhere, and does most beautiful needlework, which she had been unable to do since early in her illness, owing to inability to thread a needle. Taking a line from this, it was determined to copy nature. It not being thought necessary to break bones, large openings were made in large bones.

Bones Selected and Method of Opening the Bones

The lower end of the femur, on the antero-lateral aspect, and the upper end of the tibia, on the upper and inner face, are the sites selected.

An incision is made right down to the bone, the periosteum is pushed back so as to expose a bare area of bone large enough to admit the use of a three-quarter-inch trephine or a large bit. In all early cases an ordinary brace and bit was used, but in an effort at refinement a trephine has been used in later cases, and now a Morse bit. The main point to be emphasized, however, is that the opening in the bone should be sufficiently large; small drill-holes are not sufficient. The opening is made right into the marrow cavity, and a Volkmann spoon is inserted towards the cancellous tissue of the bone. Some of the cancellous tissue is always scooped out, more or less space being left, the whole idea being to bring about a state of decompression. This tissue is practically always found to be more like dried sponge than like true cancellous tissue. The opening in the bone may be made in both limbs. Bony debris is removed and the wound closed without drainage.

Should the hip be affected a drill-opening about the diameter of an ordinary little finger is made along the neck of the femur, aiming to reach the vicinity of the spot where the neck joins the head. Openings are also made into the trochanter and acetabular margin. At this point I would like to observe that the hip-joint seems to escape rather often in cases of polyarthritis.

Instruments Used.—I have had made a simple implement for piercing the bones. This consists of an ordinary triangular file, tempered, and with its point cut on three faces, so as to resemble a diamond drill. This eats into bone very readily, is easy to use, and not so liable to slip. The opening made by this is enlarged by Morse bits of varying sizes. Their use renders these operations much simpler and quicker. I do not now make such large openings as I did at first, a half-inch Morse bit being used on the lower end of the femur and a three-eighths-inch bit on the neck of the femur. I am not sure that I may not go back to the larger opening.

Anaesthetic for Operation.—I prefer a general anaesthetic, but spinal or local anaesthesia may be used in suitable regions.

After-treatment.—A sedative for a few nights is advisable, but in many cases the ease from pain is so marked that patients can do without any drug.

Dressings.—For wounds the lightest of dressings. Wrapping up makes them uncomfortable. Friars' balsam on gauze is suitable after a day or two.

Exercise.—Patients may be allowed to sit in a chair after a week or two, but efforts at walking and weight-bearing must be watched, as so often the bones are very brittle and fracture may result. Blame might then be placed on the wrong party. Free movement of all limbs in bed is encouraged. When sitting up the sliding of the stockinged feet on a piece of carpet placed on a polished floor is helpful and easy. Sitting on a tricycle is simple for younger patients. There is no weight on the bones when doing this. In advanced cases I insist on eight weeks as the time to elapse before attempting to put weight on the limbs. Massage, passive movement, or electrical stimulation has not been found necessary.

Drugs After Operation.—The use of drugs of the salicylate group is discouraged. For sleep luminal is sufficient.

Diet.—Any wholesome diet is permitted—bowels, of course, receiving attention. Free use of fluids is encouraged, and purgatives are to be avoided.

Recurrence of Symptoms.—Rare, and usually due to overuse of atrophied muscles and degenerate bones and joints. Flare-ups are usually localized, and opening of the bone in the region affected under a local anaesthetic will relieve.

* Read in opening a discussion in the Section of Orthopaedics at the Annual Meeting of the British Medical Association, Melbourne, 1935.

Observations Made at Operation

Changes Noted in Bone.—As already mentioned, one is struck by the amount of decalcification and of rarefaction of the bone going on to cavity formation in many cases, great thinning of the cortex being found in practically every instance. The longer the standing of the disease the greater the thinning.

The bone marrow in a typical case of osteo-arthritis of hip and knee will be found much altered. On opening the femur—and this can be demonstrated rather more clearly at the lower than at the upper end—a flow of clear, oily fluid, definitely under pressure, wells up, and if a little time is allowed will fill the wound and flow over. In it will be noted white granules, often larger than the head of a pin, and quite easily seen. This fluid and its granules I have demonstrated a score of times to onlookers. It is, of course, well known that by *stirring* up normal bone marrow one can demonstrate an oily content, as the fat content of marrow is probably always in a fluid state at body temperature. Microscopical examination of this altered bone marrow showed nothing of interest. Efforts at culture have all proved negative. All media, aerobic and anaerobic, have been employed. As recommended, a long period of incubation has been allowed. There has been no growth whatsoever. No animal experimentation has so far been done, but I hope to interest Dr. Kellaway, director of the Walter and Eliza Hall Research Institute, in this respect. In connexion with bone marrow a point that has interested me is that I have never yet seen an infected wound. I am not praising my asepsis, though in making a similar number of wounds for other surgical conditions one might expect an infected one. The wounds in the hip area and about the knee are in positions where dressings are rather hard to keep in place, and where soiling can easily occur, more especially as so many patients are more or less helpless. This has aroused the interest of both Mr. Lazarus, my operating assistant, and myself, and it is largely at his suggestion that I am stressing this point. It is possible that this bone marrow, or even all bone marrow, has bactericidal powers. I have had one test made in order to ascertain if this oily fluid has bactericidal powers similar to those of cod-liver oil.[5] Owing to difficulties in technique this experiment was of no value, but I think it will be well worth repeating when these difficulties are surmounted.

Whilst working on these cases I early formed the opinion that the condition was a primary osteitis and a secondary arthritis. Further than this, I now am of the decided opinion that it is probably the bone marrow which is the tissue primarily affected, and would urge work along these lines.

Changes Found in Joints.—I shall not weary you with these. A coarse grating indicates cartilage destruction ; I know that this grating will lessen, and even in the worst cases gradually disappear after operation.

Observation on the Blood Count.—In practically every case of osteo-arthritis there is a varying degree of anaemia. Blood counts made in a number of cases where the improved colour of the patient was noted after operation showed an average increase of 200,000 red cells in less than three weeks. A leucocytosis is usually present, but the number of white cells diminishes after operation. I check these counts from time to time, and find them fairly constant. One woman of over 60 years of age had a gain of 1,000,000 red cells in one month.

Changes in Synovial Fluid.—In certain cases there is a definite increase in the synovial fluid. This is most noticeable in the subcrureus bursa. This fluid will be found on opening the bursa—as I always do if there is any increase—to be gelatinized and curdy, and can often be drawn out in one piece. This is important ; I regard this gelatinized fluid as responsible for some of the flexion that one finds, since it later becomes organized, makes a pad under the extensor expansion, and prevents straightening of the knee-joint. I now always empty out by incision any collection of fluid in this locality.

Results of Operation

On the morning after operation a patient will often say, "I have less pain than I have had for years." Commonly pain returns and lasts for about a week, and after this the relief will be found to be permanent. Too early attempts at active movement will light it up sometimes. In certain cases where a flare-up occurs I repeat the bone-opening procedure, selecting, if possible, fresh sites.

Improved Function.—This follows the relief of pain and lessened muscle spasm. When pain is relieved there is sometimes a tendency to try too much. Attempts at walking are often made too early. From the first I have tried to insist on eight weeks as the time which must elapse.

Types of Cases that do not do well.—Those of the type described by Poncet as "rhumatisme tuberculeux." These are either anaemic, thin, and sallow, or cases of long standing, where the flush of chronic sepsis is noted on the face. The latter cases do improve, but seem to take much longer. Cases in which there is the suspicion of a specific element with signs of bone sclerosis derive little benefit. One case with a malarial and dysenteric history, where both knees were very bad, was disappointing. The pain was greatly relieved, and movements of the knee-joints which were accompanied by a dry grinding sound became smooth with no grating ; but there was no appreciable improvement in function. However, comparison with the results of other treatments gives one much encouragement to continue.

Other Methods of Treatment

Drug Treatment.—This means the use of salicylates or near salicylates. Beyond their analgesic effect drugs are not beneficial. Injections of gold are dangerous and not helpful.

Vaccine Therapy.—So far vaccine treatment has been found disappointing. Certain cases, where a tooth with root infection has been located and removed and a vaccine prepared from the infected material, have done well. These are very rare.

Bee Stings.—I am satisfied that the employment of bee-sting treatment is based on a fallacy, and that the treatment is useless.

Rest.—Most cases that have passed through my hands have previously had rest treatments, with little or no results.

Application of Heat.—Whether by packs, mud baths, diathermy, or other means, the relief of pain has only been temporary.

Fixation by Splints.—Fixation does not seem advisable, as this undoubtedly favours ankylosis, which may be in an unsatisfactory position and will not relieve pain.

Manipulation.—No good whatsoever can come from manipulation. One might as well spur on an exhausted horse. Pain is increased, flaring-up is caused. One patient with osteo-arthritis of hip and knee was subjected to manipulation under an anaesthetic on seven occasions for the purpose of breaking off exostoses. He states that his condition became much worse. After bone-opening he has greatly improved.

Removal of Septic Foci.—Teeth, tonsils, gall-bladder, and uterus all came under the light of suspicion, and have been separated from their owners with too often no good result. The B.M.A. Arthritis Committee issued a warning against ruthless and rapid removal of the so-called septic foci, and independent writers have stated that removal

of the teeth and tonsils has been followed by shock equal to that following a major surgical operation. The patient's resistance has been lowered, and the disease has made rapid progress owing to this. This has happened more often than is realized. It must not be thought that I am opposed to drainage of pus-containing areas; but I do advise caution, and more moderation, because the results have not been successful enough to justify the increased pain and suffering inflicted. The humiliation to the individual of losing all the teeth is considerable. In my opinion it is open to argument whether these so-called septic foci are really primary; it might be claimed that they are just as likely to be manifestations secondary to a general disease, and part and parcel of it. The infection may come from an entirely different source.

Causation of the Disease

Trauma does play some part, more especially in the monarticular disease of the hip or knee. Locality and unhygienic surroundings seem also to have a share in causation. The whole course of the disease, manifested more especially in children, has all the appearance of a sudden infection, and is in favour of germ invasion. I am inclined to discard all other explanations, such as disturbed metabolism, endocrine deficiency, toxaemias of unknown origin, in favour of an infection of unknown character. The explanation, I feel, lies in the bone marrow and the spleen, and further work is required in these regions.

As to whether the improvement that follows bone opening is due to relief of pressure—that is, a decompression—or whether something noxious is released from the part, or something useful is liberated into tissues, I cannot say because I do not know. Various suggestions, such as auto-vaccination, absorption of the patient's own blood which is liberated into tissues, have been made to me, but not by me.

After all, the result is the main thing, and one should not be hampered by ignorance of the causation of the disease or lack of knowledge of the reasons for improvement. My experience is that the patient always wants to know what causes it, and one's own profession wants to know the rationale of the treatment.

An Attempt at Systematization of Results

This has not been of much value owing to the great variation of age and condition in the patients. The types of cases operated upon range from partially helpless to completely helpless, from 10 years of age to 70 years of age.

I found the average duration of disease at time of operation where hip- and knee-joints were involved, either together or separately, was over six years, the duration on the patients' statements ranging from one year to twenty years. Taking the cases right through, an improvement really worth while can be expected in 80 per cent. of cases. Naturally the older the patient the less hopeful is the prognosis.

The number of cases operated on where hip- and knee-joints were involved is 106. Some recent cases are not included, as sufficient time has not elapsed to judge results.

The same line of treatment has been adopted in cases where other regions are affected by osteitis or osteo-arthritis. These cases include conditions such as spondylitis, sacro-iliac diseases, and delayed restoration of function after fractures.

Summary

1. All cases of osteo-arthritis and so-called rheumatoid arthritis belong to the same type of disease, and should be classed as such.

2. The condition in these cases is one of primary osteitis, with secondary arthritis. There is every reason to think that the bone marrow has undergone some disease change.

3. Many cases are improved by the simple procedure of opening the bone in the neighbourhood of the joint affected.

4. Improvement is manifested by relief of pain, improved health and outlook on life, with an improved blood state. Restoration of function, while slower, does occur.

5. There is reason to think that articular cartilage, unless hopelessly damaged, will recover as a result of the procedure.

6. The progress of the disease is stayed and recurrence is exceptional, and then only in the nature of a slight flare-up, which can be dealt with by local opening of the bone.

7. The procedure is simple, unaccompanied by shock or unfavourable sequelae, and does not call for a long stay in hospital nor for expensive after-treatment.

REFERENCES

[1] Report of British Medical Association Arthritis Committee, *British Medical Journal*, 1933, i, 1033.
[2] Knaggs, Lawford: *Brit. Journ. Surg.*, 1932-3, p. 116.
[3] Mackenzie, Forbes: *Med. Journ. of Australia*, April 11th, 1931; ibid., December 3rd, 1932, p. 690.
[4] Report of British Medical Association Arthritis Committee, *British Medical Journal*, 1933, i, 1042; ibid., 1933, i, 1032.
[5] Lohr and Treusch: Action of Cod-liver Oil on Wound Suppuration, *Zentralbl. f. Chir.*, 1934, p. 1803.

MEASLES AND CONVALESCENT SERUM

BY

G. W. ELKINGTON, M.B., M.R.C.P.

An epidemic of measles in a school is usually serious; few escape, and there is a constant dread of complications. The introduction of the use of convalescent serum to prevent or to attenuate the disease does not yet seem to be appreciated as widely as it should, and this description of its effect in a recent epidemic may be of interest.

In September, 1935, in a preparatory school near Malvern, there were ninety-seven boys, of whom fifty-six had not had measles. On the eighteenth day of term a senior boy was diagnosed as a case of measles, his rash appearing the next day. Isolation of contacts was enforced, but in two weeks there were nine cases in different parts of the school. Of the remaining forty-six susceptibles twenty-two were given a small dose of convalescent serum, and most of them were included in the third batch of thirty-nine cases. Six formed the fourth batch, and the last remaining susceptible made the fifth. Thus the attack rate was 100 per cent., and there were none among them with a previous history of measles.

Epidemic in the Unprotected Cases

The thirty-four boys who received no serum went through the usual stages. They lay like logs for three days, ill and miserable, and they all had coughs. As time went on the intensity of the illness became less, the days of fever and prodromal symptoms were reduced, and convalescence was established earlier, but the accompanying bronchitis became worse up to the middle of the main outbreak, after which it diminished. I would emphasize, nevertheless, the severity of the respiratory symptoms in this group. The last few cases appeared to have acquired some protection through having lived in the measles atmosphere. They were mild cases and in severity of symptoms compare with those who had received a small dose of serum. But one boy who arrived in the school on November 10th fell ill on the 19th, and was the worst case in the last batch.

Serum Technique

When it became obvious that isolation had failed, the boys' parents were requested to send convalescent serum if they wished their sons to be inoculated, and in five cases they did so. A supply was obtained from the London Fever Hospital sufficient for seventeen others, and so altogether twenty-two cases received this treatment.

Various authorities differ as to the interval which should elapse between exposure and inoculation, but in a school the exact date of exposure is uncertain in a large number of cases. The inoculation of 5 c.cm. of convalescent serum into the buttock was carried out on these twenty-two cases between October 29th and November 1st. This aimed at giving inoculation or rather attenuation doses on the fifth day after the appearance of the rashes in the second batch. I think this was too early, but the results were satisfactory. There were no serum reactions.

Epidemic in the Protected Cases

The first of these cases occurred four days after inoculation, and had a modified rash and no cough. The boy was not very ill, but more so than the later cases. Most of the others came about twelve days after inoculation. The most remarkable thing was the complete absence of toxaemia and cough, and they were throughout bright and cheerful, in striking contrast to other unprotected cases in the same room. On two occasions boys with temperatures of 104° F. had to be reprimanded for being too high-spirited. The rashes were well marked, and the high fever was confined to one day. In some cases there was a delay in the appearance of the rash, and the prodromal and incubation periods seemed to be lengthened. The explosive character of the rash was noted in two cases, but that also occurred in the later cases of the unprotected group. One boy received 25 c.cm. of adult serum, but he had quite a sharp attack with some colitis and adenitis. It transpired that the donor had never had measles.

Complications and Sequelae

In the unprotected all had a certain amount of bronchitis, and there was one bronchopneumonia ; two other cases had albuminuria a month later. There were no coughs in the serum-protected, and no albuminuria. There was an interesting coincidence in the development of acute appendicitis in two boys at the same time on the day their rashes appeared. The first boy, who had not received serum, was too ill to stand an operation owing to a severe bronchitis, and several anxious days were passed before the condition subsided and his chest cleared. Later operation proved that the appendix had been on the point of perforation. The other boy had been serum-protected, and the operation was proceeded with and a gangrenous appendix removed with chloroform anaesthesia. He had no cough, nor did his condition cause anxiety at any time. These two gave no history of previous abdominal trouble, but, nevertheless, I thought the appendicular conditions were of old standing and were lit up by the fever.

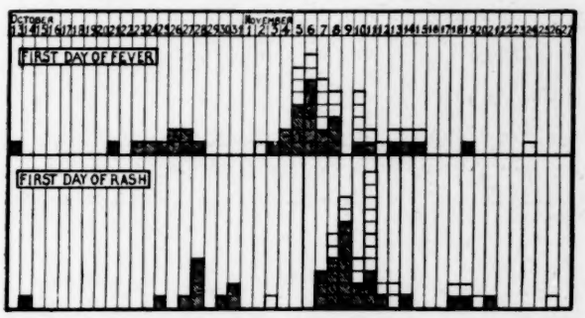
General Comparisons

To judge the effect of the serum thirteen serum-protected boys were compared with the same number of ordinary cases, all from the third batch. Owing to the diminishing intensity of the measles as the epidemic progressed it was necessary to take cases which fell ill at the same time. These unprotected cases had 1.7 days of fever of 103° F. and over, taken orally, and by the end of the term their average loss in weight was 1.17 lb. The serum-protected cases had 0.5 day of 103° F. and over, and only lost an average of 0.33 lb. This is a valuable indication of how much protection was afforded by the small dose of 5 c.cm.

The table shows the variations in weight in the serum-protected, non-protected, and the control group during the measles period, during the whole term, and also from the beginning of the Autumn to the Easter term. The fallacies of weight records are too well known to need comment, but the table does show two facts—the relatively small loss of weight in the serum-protected, and in the later and longer period the fact that the non-protected rapidly regained an average weight.

Average per Boy	Measles Group: Third Batch of Epidemic		No Measles Control Groups:	
	No Serum	Serum	1935	1934
Age in group ...	10 yrs. 8 mos.	10 yrs. 1 mo.	10 yrs. 4 mos.	10 yrs. 6 mos.
Days of 103° plus ...	1.7	0.5	—	—
Loss of weight in measles period (fifth to tenth week of term) ...	1.17 lb.	0.33 lb.	—	—
Gain in weight: First to twelfth week	0.48 lb.	1.23 lb.	2.15 lb.	2.02 lb.
September, 1935, to Jan. 22nd ...	2.21 lb.	2.13 lb.	2.43 lb.	1.7 lb.

Two incidence charts are given: one shows the day on which each boy fell ill, and the other is worked out for the day the rash appeared. These demonstrate that the latter provides a more accurate map of the epidemic. Cases 4, 5, and 6 fell ill on October 23rd, 24th, and 25th, but all produced their rashes on the 28th. Case 51, who had his first day of temperature on November 14th, producing a rash the same day, comes into the third batch of cases in the lower chart, whereas the cases on either side of him in the upper chart later formed the fourth batch.



Incidence charts. The term commenced on September 25th. Shaded squares indicate ordinary cases, and white squares serum-protected cases.

Conclusion

With forty boys in bed at one time the nursing duties were heavy, but were lightened considerably by the serum protection. As is often the case during a measles epidemic, all other minor ailments disappeared from the rest of the school. The dose of 5 c.cm. is small, but produced the desired effect, and I believe an even smaller dose would have given the required result. After all, we were aiming at providing what nature gave to those who were lucky enough to survive the first three batches. The first and possibly the second we can do nothing for, and these, though severe, usually make a normal recovery, but time after time experience proves that the worst complications occur in the third batch. This was so in this

epidemic, especially as regards bronchitis, and we are now armed with a powerful weapon to ward off these complications. The supply is scarce, and every chance should be taken to supplement it. It would seem that the best time to take the blood is two weeks after the temperature has fallen. Most fever hospitals will supply collecting outfits and carry out any necessary tests on the blood when received, and they welcome any addition to their stock.

Summary

1. An epidemic is described with an attack rate of 100 per cent.
2. Attenuation was obtained by 5 c.cm. of convalescent serum in twenty-one cases, and an entire absence of cough and toxaemia resulted.
3. Appendicitis and albuminuria occurred as complications in the non-protected cases.

NEEDLES IN FEET

A METHOD OF REMOVAL IN DIFFICULT CASES

BY

ERIC I. LLOYD, M.B., B.CH., F.R.C.S.

ORTHOPAEDIC SURGEON TO THE ROYAL NORTHERN HOSPITAL; SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET

Attempts to remove a needle from a foot or hand have humbled many a young surgeon who light-heartedly embarked on this procedure in the casualty department without a tourniquet or a general anaesthetic, but with a little novocain and a lot of hope. The author, when a house-surgeon, soon learned that it was wiser to admit these patients to the ward in the expectation of somebody else having to do the operation. Nowadays a shock-proof portable *x*-ray apparatus ought to be available in every theatre, and it is partly in the hope of speeding on the millennium that these three cases are recorded.

In each instance there had been at least one previous attempt at removal of the fragment, and in Case I it had been undisturbed for forty years and was partly embedded in the os calcis. By the simple method about to be described, however, the three cases were each dealt with at one sitting and the fragment successfully extracted.

The operation is performed under general anaesthesia and a tourniquet. Two fine Kirschner wires are passed through the foot at right angles to one another and in such a way that they cross close to the foreign body. Next an *x*-ray photograph is taken in two planes, and the foreign body thus localized in relation to the two wires. An incision is then made which will give the best approach. The wires are left in position until the foreign body has been extracted and they are then removed.

Case I (Fig. 1)

A man of 73 (referred to me by Dr. M. Coburn) had run a needle into the heel of his left foot forty years previously. There had been no serious trouble from it until three weeks before I saw him, but during those three weeks he had so much pain that he walked on his toes to spare the heel. At operation the fragment, half a centimetre long, was easily found by the aid of two Kirschner wires and radiography. It was partially embedded in the under surface of the os calcis, and the projecting end had been the source of the pain.

Case II (Fig. 2)

A youth aged 18 had run a needle into his right heel three months previously, and had undergone two unsuccessful operations for removal. By means of two Kirschner wires and *x*-ray control a fragment of needle, two and a half centimetres in length, was found and removed.

Case III (Figs. 3 and 4)

A boy of 14 had run a needle into his foot, and an unsuccessful attempt had been made to remove the fragment. Six weeks later it was easily located and removed by the two-Kirschner-wire method under *x*-ray control.

The following points should be noted:

1. Reopening a recent operation wound is a frequent cause of sepsis in these cases. It is probably wiser to work through a fresh clean incision or to wait some weeks after the last operation, or both.

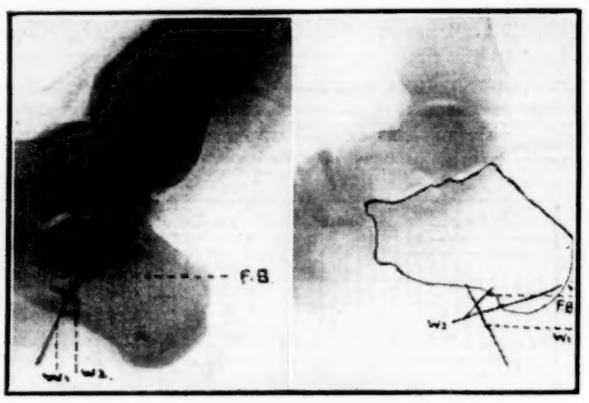


FIG. 1.

FIG. 2.

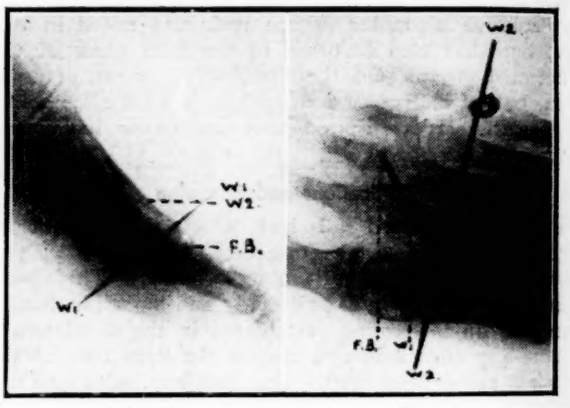


FIG. 3.

FIG. 4.

F.B. = Needle fragment. W1 = Kirschner wire in sagittal plane. W2 = Kirschner wire in coronal plane.

2. A Michel's clip should be placed on one Kirschner wire near the skin to facilitate interpretation of the skiagram.

3. Although *x*-ray photography takes a little longer than screening, it is probably the better method in these cases.

The tenth Congress of the German Society of Tropical Medicine will be held on June 2nd and 3rd in the Institut für Schiffs- und Tropenhygiene, Hamburg. The main subjects for discussion will be sequels of malaria in the war, amoebic dysentery and its sequels, yellow fever, and the present position and future prospects of research. Notifications of papers to be read should reach Professor Nocht, Bernhard Nochtstrasse 74, Hamburg 4, before May 1st. The monthly organ of this society entered its fortieth year on January 1st, and will be entitled henceforth the *Archiv für Schiffs- und Tropenhygiene*. Professor Nocht contributes a preface to the first issue of the new volume, indicating the new developments which are contemplated.

Clinical Memoranda

Poisoning after One Instillation of Atropine Drops

Atropine poisoning following instillation of the drug into the conjunctival sac is not widely recognized, though it is probably more frequent than the small number of cases recorded would suggest. A fatality is reported by Rockliffe in a sickly infant aged 10 months—the subject of congenital cataract. Three drops of 1 per cent. atropine sulphate solution had been put in each eye followed by one drop in each eye the next day. Four and a half hours later the child was flushed and had a temperature of 102.2° F., there was slight twitching, and the lips and mouth were dry and sticky. The child died eight hours later, the condition having become rapidly worse, the temperature rising to 105.6° F. at one stage. Post-mortem examination showed nothing abnormal apart from small haemorrhages on the surface of the liver and pleura. In view of the rise in temperature and the presence of an erythematous rash, Rockliffe questioned whether atropine poisoning was really the cause of death.

In English literature atropine poisoning followed by rapid recovery has been reported by Kelynack, Owens, Tyson, Nunnelly, Harris, Rodger, Wise, and Spurgin.

Review of the Literature

1. *Vehicle.*—In all cases atropine in the form of drops had been used.

2. *Variation in the Time of Onset of Symptoms.*—In Spurgin's two cases the symptoms came on within one and a quarter hours after a single instillation ; in Wise's case only after two days' use ; in the case Harris records only after continuous use for several months.

3. *Age Incidence.*—Four out of twelve cases were patients over 30 years of age (Nunnelly, 43 and 66 years ; Owens 73 ; Harris, 30) ; seven of the remaining eight cases were children under 12.

4. *Duration of Symptoms.*—All observers record complete recovery within forty-eight hours.

5. *Symptoms.*—A scarlatiniform rash is mentioned by most observers. Pyrexia is recorded by Owens ; apparently it is not a marked feature in most cases. Dryness of mouth and skin, dilated pupils, hilariousness gradually passing into restless excitement, muttering, and even delirium and convulsions may be present.

6. *Treatment.*—There is no specific treatment: stimulants and morphine have been given.

It would appear that fatalities in atropine poisoning are rare because of the rapid excretion of the drug, and the great difference between the toxic and the fatal dose. But the official dose of atropine sulphate is less than the quantity contained in one drop of the 1 per cent. solution.

The following case has two points of special interest:

1. Atropine poisoning developed after one instillation of 1 per cent. drops, though no untoward symptoms were present when atropine ointment was used for four weeks, three years ago, and again three months ago.

2. A slight temperature was noted during the height of the poisoning.

Case Report

A child aged 5 had two drops of 1 per cent. atropine sulphate instilled into each eye at 3.30 p.m., prior to retinoscopy ; three hours later he was rather drowsy and flushed. He became restless at 8 p.m., wetting the bed, and singing and shouting ; this alternated with periods of crying and terror, and finally he developed convulsions. When seen an hour later he was covered with a scarlatiniform rash, the mouth was extremely dry, and the pupils were widely dilated. It was not possible to examine the chest, but the respiration rate of 16 with a pulse rate of 138 ruled out pneumonia. In the absence of any throat condition or rise of temperature the condition was considered to be atropine poisoning. An eighth of a grain of morphine was given hypodermically at 11.15 p.m., and repeated at 12.5 a.m. without apparent effect. As the condition had not improved a further quarter of a grain was given hypodermically at 1.15 a.m. After this the child became quieter, still, however, reacting to every stimulus of light or sound ; there were repeated convulsions until 3.10 a.m. At 3.30 a.m. the child had two teaspoonfuls of water and slept until 5.20 a.m., when he was so far recovered as to drink half a cupful of water. Until 7.40 a.m. occasional twitchings of the limbs were observed, but thereafter the boy made an uninterrupted recovery.

Analysis of the solution used showed an atropine sulphate concentration of 1.035 per cent. The stopper of the bottle showed a small black deposit, due to silver ; no other impurities were found.

My sincere thanks are given to Mr. Arthur Sorsby for his assistance in compiling these notes.

CLARA M. SCALLY,
Assistant Medical Officer of Health and School Medical Officer, Barnsley.

BIBLIOGRAPHY

Harris: *Lancet*, 1898, i, 98.
Heller: *Journ. Amer. Med. Assoc.*, 1929, xcii, 800.
Kelynack: *British Medical Journal*, 1890, i, 421.
Nunnelly: Ibid., 1890, ii, 1121.
Owens: *Lancet*, 1890, ii, 443.
Rockliffe: *Trans. Ophthal. Soc. U.K.*, 1902, xxii, 302.
Rodger: *Glasgow Med. Journ.*, 1903, cii, 60.
Spurgin: *Lancet*, 1905, ii, 964.
Tyson: *British Medical Journal*, 1889, ii, 921.
Wise: Ibid., 1904, i, 189.

Belated Transverse Presentation with Recovery in Twin Pregnancy

The following case is of interest for at least its rarity, and illustrative of the recuperative powers in healthy subjects.

A young woman aged 19, primipara, was admitted to hospital at 4 p.m. She had travelled over a mile by boat. She stated that she had performed her usual household duties, which included the milking of cows at 8 a.m. At 10 a.m. she had some abdominal pain, not severe ; when the pain increased at 2 p.m. she sent for the local nurse, who discovered a foot presenting and advised removal to the hospital.

On admission a foot, hand, and a loop of the cord were presenting, the foot showing signs of failure of circulation, discoloured almost black, and no impulse could be felt in the cord.

A diagnosis of twins was made. The other leg and hand were seized and the after-coming head controlled ; a male child was delivered apparently moribund. Artificial respiration was applied, and after vigorous massage with spirit and clearance of the larynx by insufflation breathing was established. Twenty minutes later the second membranes, which were bulging, were ruptured, and the second child (first vertex) was born by almost precipitate labour, as the head was delivered almost simultaneously with the rupture of the membranes. About six ounces of liquor amnii came away. The second child cried lustily on delivery. Half an hour was allowed to elapse, when two complete placentae were expressed. Between the placentae was a blood clot, brown in colour.

The points of interest in this case are: first, the recovery of infant No. 1 after prolonged pressure on the cord ; secondly, the weights of the infants and the placentae. The first child weighed 7 lb., the second 6 lb., the combined placentae 3 lb., the blood clot 1 lb., and the liquor amnii was six ounces with the second child, which gives a total of 17 lb. 6 oz. Owing to the rapidity required for the deliverance no anaesthetic was possible ; there was neither vaginal nor perineal tear. Hot-water bags with massage on the leg of No. 1, afterwards encased in cotton-wool, soon restored the circulation, and the discoloration disappeared. The mother made an uninterrupted recovery, both infants doing well.

J. B. KELLY,
P.M.O., Mackenzie City Hospital.
British Guiana.

Reviews

LEJARS' URGENT SURGERY

Lejars' Chirurgie D'Urgence has held for many years an international reputation of the highest order, and the ninth edition[1] will be welcomed as an authoritative statement of the most modern views on the surgery of acute conditions. Originally intended to assist the isolated practitioner in dealing with unfamiliar conditions of a minor nature which would not brook delay, the work has now far exceeded these early intentions, and in two large volumes deals with every surgical condition which can by any possibility be regarded as acute.

With the developments of transport and the establishment of well-equipped centres all over the country conditions of surgical work have entirely changed, and it is now only rarely that the general practitioner is compelled to attempt procedures beyond his reasonable competence. A work on urgent surgery must now address itself rather to the young surgeon who only lacks experience, but many an older surgeon may turn to these volumes for assistance in an unexpected difficulty. Indeed, the experienced surgeon, accustomed to be surrounded by the skilled attendance and resources of a hospital, may stand in more need of information on technical points than the isolated practitioner who is accustomed to fend for himself.

The appeal of these volumes must be very wide, for they deal in the most elaborate detail with every practical emergency that a surgeon can be called upon to face, from small wounds of the fingers to the greatest cranial and abdominal injuries. After a brief description of the essential materials and instruments required in small operations and their methods of preparation, a short account is given of the methods of anaesthesia more generally applicable, together with a short but clear and effective discussion of local and spinal anaesthesia. Fractures of the skull, their complications and treatment, are briefly described, and considerable attention is devoted to wounds of the face and skull, including wounds by gunshot. This is followed by a chapter on suppuration in the face, mouth, and the pharynx, and a full account of the treatment of suppuration in the mastoid and its complications. A chapter on wounds of the neck includes a detailed discussion of wounds of the great vessels, and this is followed by a very full discussion of methods of dealing with foreign bodies in the trachea and oesophagus. A chapter on the chest deals especially with wounds of the lungs and of the heart, the latter being very fully discussed, and there follows an excellent chapter on thoracic suppuration.

The second half of volume i deals with abdominal injuries and the various acute conditions which may arise in the abdomen. Gunshot wounds receive full consideration, and injuries of the biliary passages, of the spleen, and of the pancreas are treated in great detail. The same must be said of injuries of the genito-urinary tract, in which has been included an exact account of the treatment of wounds of the ureters, whilst rupture of the bladder is fully discussed. Haemorrhage and perforation of the stomach, and intestinal obstruction in its many forms, are dealt with in a most practical manner, and the volume closes with a thorough survey of the treatment of acute appendicitis and its complications.

In the second volume there are considered the emergencies of genito-urinary surgery, such as calculous anuria, rupture of the urethra, and acute retention, and rectal emergencies, such as prolapsed piles and abscesses. Strangulated hernia and all its complications are dealt with in great detail, and with admirable clearness. The latter half of the volume is devoted to the treatment of injuries of the limbs, and no section of the work is of greater value. Every kind of fracture and dislocation is dealt with in the most practical manner with exact details which cannot fail to be of value even to those who have wide experience of injuries.

A most attractive feature of the work is the profusion of its illustrations, many of which reach a very high order of both artistic and technical excellence. The woodcuts are especially attractive and are drawn with a fineness typical of the best French productions. Numbering over 1,200 in all, they serve to make clear points which would otherwise remain obscure, and we venture to think that a surgeon who knew no French might well place a high value on the volumes for the sake of the illustrations alone.

We do not know of any work on the surgery of acute conditions which can approach this in completeness and in perfection of production. It reflects very great credit upon Professor Brocq and Dr. Chabrut, who are responsible for the new edition, and it is a worthy memorial of the eminent surgeon who conceived it—Félix Lejars.

[1] *Félix Lejars' Traité de Chirurgie d'Urgence.* Ninth edition, revised by Pierre Brocq in collaboration with Robert Chabrut. Two volumes. Paris: Masson et Cie. 1936. (Pp. 1,286; 1,250 figures. Broché, 170 fr.; cartonne toile, 190 fr.)

LARYNGOLOGY AND OTOLOGY

Over twelve years ago Messrs. J. and A. Churchill began their publication of the widely known Recent Advances Series, in which the literature on medicine and surgery in its various branches has been collected and abridged by various authors and kept up to date in succeeding editions; yet there was no mention of a volume on otolaryngology. This omission has now been rectified by the publication of *Recent Advances in Laryngology and Otology*,[2] by Mr. R. SCOTT STEVENSON. To compile such a volume was admittedly extremely difficult, owing to the rapid expansion of a specialty which has already shown a tendency to specialism even within the specialty. Mr. Scott Stevenson must be congratulated on the method he has adopted "to stimulate" the interest of medical practitioners on the problems of the throat, nose, and ear. He has made no attempt to discuss or summarize all that the specialty embraces, but he has picked out subjects which are continually under discussion. To mention a few: the tonsil problem, cancer of the larynx, cardiospasm, hearing tests, mechanism of the labyrinth, and Ménière's disease. He has epitomized recent work on the various subjects, and at the end of each chapter has given a short conclusion. Criticism might be advanced that these conclusions are too concise and inclined towards the author's own ideas and not to opinion in general, but in mitigation of such a criticism the difficulties of collecting, disentangling, and condensing a vast amount of literature on an apparently small anatomical area, and of comparatively recent date, might have suggested to the author an easier course of writing a treatise rather than a review.

The volume is well illustrated, the illustrations being frankly borrowed from original articles and monographs. This has led in many cases to undue concentration on an article from which the illustrations have been permissibly appropriated. Certain material might perhaps have been left out, such as the graphic description of the dissection of the tonsil, which is not a recent advance, and could be dealt with in a standard textbook. The book will be of the greatest help to the specialist who is familiar with the recent literature and who wishes to refresh his memory. The embryo specialist might have some difficulty in following the text unless he referred to

[2] *Recent Advances in Laryngology and Otology.* By R. Scott Stevenson, M.D., Ch.B., F.R.C.S.Ed. London: J. and A. Churchill Ltd. 1935. (Pp. 346; 128 figures. 15s.)

the original articles—perhaps that is the purpose of the Recent Advances Series.

Comment on the various chapters in the book is unnecessary; after all, it is a summary of recent writings of other authors, and one can only admire the author's restraint in his own commentary on some of the subject-matter. Special mention, however, must be made of the chapter on tuberculosis of the larynx, which sets out the experiences of the author as consulting laryngologist to the London County Council tuberculosis hospitals. This chapter might well be reprinted as it stands in many of the textbooks of medicine. It is to be hoped that future editions will be kept up to date with the same success.

MIDWIFERY AND GYNAECOLOGY IN BRIEF

Since the first edition of his handbook[3] appeared nine years ago, Dr. W. F. T. HAULTAIN has secured the co-operation of Dr. CLIFFORD KENNEDY in the preparation of a second edition. The publication of the work has also changed hands, and has been taken over by Messrs. E. and S. Livingstone. In order to bring it up to date it has been subjected to revision and some new chapters have been added. The format of the book has been changed very much for the better, and the printing and general production are admirable.

The book is essentially a synopsis for the use of students who desire such an aid to the rapid revision of their knowledge for examination purposes, and judged on this level it may be cordially recommended. In some respects it departs from the usually accepted teaching, as, for example, in the description of the pelvic fascia, and there are a number of minor inaccuracies. The arrangement follows the usual lines, but we were surprised to find the subject of metropathia haemorrhagica included in the section headed "Infections of the Genital Tract." For the purpose of the student the whole subject is sufficiently covered, and our only doubt is whether the price is not rather high for a book with such a comparatively limited appeal.

PSYCHOLOGY OF CHILD'S PLAY

Modern psychology is based on a theory of determinism; that is, that no behaviour, however bizarre or unexpected either by the subject himself or by those who observe him, is without some determining cause. Such determining cause is to be found in the emotional reactions of the individual of even the existence of which he may not be aware. Few will dispute the flood of light which the application of this theory has shed on the problems not only of mental illness but also of everyday behaviour. Heretofore little regard has been paid to the play activities of children, but since the institution of child guidance clinics it has been recognized that the study of this behaviour in the light of modern psychology may, and indeed does, afford a great deal of useful information as to the emotional reactions of the young. How important this may be will be appreciated when it is realized that many of the psychoneurotic states at least can be traced to distortions of the emotional reactions in early childhood.

If, therefore, it is possible to learn more about these early emotional attitudes by an objective study of children's play, much may be added to our psychiatric knowledge, and much may even be accomplished while the child's mind is still in a plastic state to prevent future illness and breakdown. Dr. MARGARET LOWENFELD's book[4] is a record of observations on children's play at the author's institute of child psychology. After a brief section on the historical theories of play the technique used in the observation of play is described. Since spontaneity of the play activity is essential the adult observer must adapt himself in various ways to avoid disturbing this. Rules are laid down for this purpose, and the play material is chosen as the result of experience to bring out to the best advantage the material which is to be investigated. Observations are described under the following headings: historical theories of play; the observation of play; play as bodily activity; play as repetition of experience; play as the demonstration of fantasy; play as realization of environment; play as preparation for life; group games; the comic element in play; children who cannot play. As a result of these observations it is concluded that play serves four purposes: (*a*) It serves as the child's means for making contact with his environment. (*b*) It makes the bridge between the child's consciousness and his emotional experience, and so fulfils the role that conversation, introspection, philosophy, and religion fill for the adult. (*c*) It represents to the child the externalized expression of his emotional life, and therefore in this aspect performs for the child the function taken by art in adult life. (*d*) It serves the child as relaxation and amusement, as enjoyment, and as rest.

AN AMERICAN SURGEON'S MEMOIRS

We learn from *Fifty Years a Surgeon*[5] that Dr. ROBERT T. MORRIS practised in New York as a surgeon with gynaecological tendencies, that he was educated at Bellevue Hospital, and taught for many years in the post-graduate school. His reminiscences therefore cover the great revolution which has taken place during the last half-century. They show that, starting from widely different points, American and British surgery are approximating the same goal. American surgery was heavily handicapped from the beginning. The civil war had dislocated everything; there was no tradition, education was poor, and the medical students were poorer. The hospitals in New York were little better than our old Poor Law infirmaries, for Dr. Morris tells of 2,000 beds at Bellevue with indifferent nursing. We were better equipped in England, although our arrangements were by no means ideal. We had a long tradition of surgery as a separate branch of medicine taught by Liston, Skey, Paget, and Fergusson to students who had already acquired more than the elements of general education. Our hospitals were numerous and small, and the inmates were nursed by those who devoted their lives to the service, having been taught through many generations that the patient was a human being and was the first consideration. At this time in America surgery was a branch of general practice, and could hardly be otherwise. The distances were great, and it was not possible to obtain skilled assistance, whereas in Great Britain a surgeon could always be in attendance within a few hours, and the general practitioner in the village rarely undertook a major operation. The class of patient, too, differed greatly. In England the patient was sturdy and unemotional; in America he was unstable and excitable. Dr. Morris tells of his first case of laminectomy:

> "The young man belonged to a church almost across the street from his home. At the moment when I began the operation some one gave the signal and the church bell began to ring. The operation was completed with the church bell tolling and the sheriff [coroner] waiting."

Dr. Morris divides his reminiscences into four periods: the first, when anatomy was predominant; the second,

[3] *A Practical Handbook of Midwifery and Gynaecology.* By W. F. T. Haultain and Clifford Kennedy. Second edition. Edinburgh: E. and S. Livingstone. 1935. (Pp. 356; 45 figures. 15s. net.)

[4] *Play in Childhood.* By Margaret Lowenfeld, M.R.C.S., L.R.C.P. London: V. Gollancz, Ltd. 1935. (Pp. 345. 8s. 6d. net.)

[5] *Fifty Years a Surgeon.* By Robert T. Morris, M.D. London: Geoffrey Bles. 1935. (Pp. 276. 10s. 6d. net.)

when anaesthesia had led to a great increase in the number of operations ; the third, or bacteriological, era ; and the fourth, in which we are now living, when surgery is running along scientific lines and is being practised by men properly trained in the art. There are some interesting chapters on faddists, on birth control, on jealousy amongst medical men, and on fee-splitting, which Dr. Morris aptly compares with " ambulance-chasing " in legal circles. Both evils appear to be much more common in the United States than with us. The book concludes with a pleasant picture of Dr. Morris in retirement, enjoying his well-earned leisure in sport and the study of nature. It is well worth reading as an account of a well-spent life, different in every way from that of a successful surgeon in the British Isles. It may be noted that the author's Latin is not unimpeachable, that Robert Liston never received the honour of knighthood, and that Knowsley Thornton's name is spelt incorrectly. A proof that he has not always " verified his references."

THE ART OF PRESCRIBING

If we may judge from the financial success of many much-advertised nostrums the faith of the public in the efficacy of medicines is certainly not a declining creed ; professional adhesion to this doctrine is, however, not so unqualified, and demands in each instance evidence that will satisfy an exact inquiry. In the preface to his *Prescription Writing and Formulary*[6] Professor CHARLES SOLOMON expresses his conviction that definite evidence of therapeutic values exists, and that " medical treatment by means of drugs," in spite of new and rival agencies, " remains the most important method in the hands of the physician." To secure the success of this method he claims that certain conditions are necessary, and one of these is that the remedy chosen should be not only appropriate, but should also be suitably presented in the form of a written prescription. For " rote " prescriptions, and for proprietary and patent medicines of unknown composition, he has little respect. On the contrary, he argues that each patient presents his own problems, and that individuality in prescribing drugs is just as important as individuality in the use of other remedial measures. His purpose is to discourage the use of commercial and ready-made preparations, and to stimulate the physician to adhere to the traditional practice of extemporaneous prescribing. Hence the first part of his book deals with the classical form and structure of the prescription and with the several methods by which medicines may be administered.

The information here provided is very full and detailed, and is exactly what the medical student or junior practitioner requires when brought face to face with the individual problems of medical practice in so far as these relate to drug administration ; even the question of economy in prescribing is not disdained. Another feature of the book, occupying well over a hundred pages, appears in the shape of prescriptions classified according to the therapeutic uses of the principal ingredient, and these are offered not for slavish imitation but as illustrations of the principles advocated in the earlier pages of the volume. There is no attempt to teach pharmacology or doctrinal therapeutics. The aim is a limited and practical one—namely, to help practitioners to use most effectively the medicines which they wish to employ. A very full and exact index merits a word of recognition. Professor Lewellys F. Barker of Johns Hopkins University writes a foreword, in which he commends the book as " very useful to all medical practitioners."

[6] *Prescription Writing and Formulary. The Art of Prescribing.* By Charles Solomon, M.D. Philadelphia and London: J. B. Lippincott Company. 1935. (Pp. 351 ; 32 figures. 21s. net.)

DISEASES OF CHILDREN

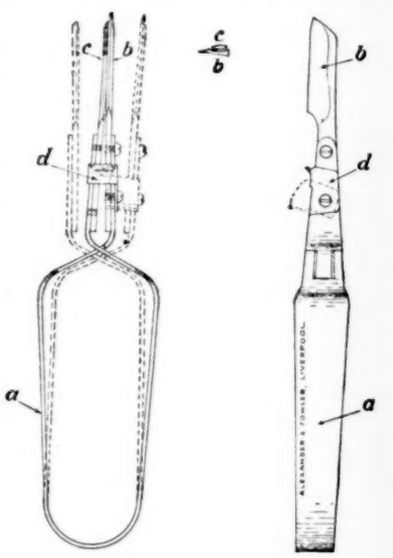
There is little need to introduce Dr. ROBERT HUTCHISON'S *Lectures on Diseases of Children* to the medical public, and the seventh edition now published (London, E. Arnold and Co., 1936, 21s.) will certainly prove as popular as previous issues. The particular personal touch about this authority's writings and the essential clinical nature of his teaching combine to make this such an easily read volume that the beginner may unwisely assume that paediatrics is an easy subject. Thirty-two years have elapsed since this collection of lectures first appeared in book form, but it has been revised again and again. Its modernity is well shown in sections dealing with " pink disease " and " the problem of the solitary child." A useful addition to the present edition is a lecture on chronic constipation in infancy and childhood. The illustrations have always been a helpful feature of this book, but two *x*-ray pictures in the section on pulmonary tuberculosis are poor specimens—possibly in order to emphasize the greater importance of clinical examination! If there are medical practitioners who do not already possess this work we advise them to obtain it at once.

Preparations and Appliances

A " DILATING TRACHEOTOME "

Dr. CYRIL A. PAULUSZ (Warrington) writes:

The instrument described here is one intended for performing tracheotomy, and is particularly suitable for emergency operations. I have used it successfully on several cases of laryngeal diphtheria during the past few years. It is a combination of a tracheotomy knife and dilator, and consists of a handle similar in form to that of a cover-slip holder (*a*), to the distal end of which are attached a knife blade (*b*), the the sharp edge of which is continued over the pointed end to an extent of about one-eighth of an inch, and a flat, blunt blade (*c*), the latter being made to fit in a groove in the thick margin of the knife blade (*c*, *b*). By means of a little movable clasp (*d*), attached half-way between the shoulder of the handle and the cutting edge of the knife blade, the two " blades " may be held together or separated as necessary, pressure on the handle after the clasp has been " released " causing the separation of the blades for the dilating effect. For cutting through the tissues to reach the trachea the instrument is used with the sharp edge downwards and the clasp in the " on " position, so as to keep the two blades together, but when the opening is to be made into the trachea the instrument is turned with knife-edge upwards at an angle of about 45 degrees and is passed through the tracheal rings, the cut being directed towards the cricoid cartilage, the index finger of the operating hand resting on the " clasp " ready to push it back, so as to separate the blades sufficiently to allow a tube to be passed in between them. Having inserted the tube the pressure on the handle is released and the instrument withdrawn.



The instrument was made for me by Messrs. Alexander and Fowler of Liverpool.

British Medical Journal

SATURDAY, FEBRUARY 15th, 1936

ADVANCES IN INSULIN THERAPY

One of the main difficulties in endocrine therapy is to adjust to the needs of the body, hour by hour, the particular substance in which it is deficient. Many endocrine products exert their full effect only when given by injection, a method which has both physiological and psychological disadvantages, as the physician who has to give insulin to a diabetic well knows. Many workers have tried to find some method of administration more pleasant than by hypodermic injection which would also allow of a more protracted action of the hormone. All sorts of attempts have been made—insufflation, inunction, and ingestion—with various "protective" substances. Lack of success with these has been due to various causes, the outstanding among which are that insulin is rapidly destroyed by proteolytic enzymes and fails to be absorbed to any extent by mucous membranes. S. Hermann and H. Kassowitz[1] and H. Pribram[2] claim to have reduced the blood sugar in experimental animals by inunction of an insulin ointment, but it is improbable that this will be of any clinical use. In the meanwhile, difficulties obstinately obtrude themselves. Insulin is rapidly absorbed into the blood after injection; necessity and the patient demand that the number of injections in the day should be reduced to a minimum; and in the severe case the physician has to steer a hazardous course between hyperglycaemia and hypoglycaemia. In the morning, when the blood sugar is high, he has to give such a dose as will cope with the hyperglycaemia and with the carbohydrate contained in the first meal. At night the dose of insulin must be small enough to avoid the risk of a hypoglycaemic attack during sleep and large enough to maintain as low as possible a level of sugar in the blood when the morning injection of insulin has to be given. These aims are more or less defeated by the rapidity with which insulin is absorbed and acts—a fault that becomes a virtue in the treatment of diabetic coma and of diabetes complicated by infection.

In an attempt to solve these problems Hagedorn[3] and his co-workers at the Steno Memorial Hospital in Copenhagen have tried the effect of combining insulin with protamines, with the end in view of retarding the absorption of insulin from the tissues after injection. The protamines are elementary compounds of amino-acids containing one or more of the basic constituents lysine, arginine, and histidine. The raw material from which the protamines are obtained is the ripe sperm of fish. Investigating the solubility in serum of various protamines Hagedorn and his colleagues finally hit upon a protamine (not hitherto described) from the sperm of *Salmo irideus*, which formed a compound with insulin having a lower solubility than any they had so far used: the minimum solubility is reached at a *p*H of 7.3—that is, near the reaction of serum. For a period of more than two years they treated about eighty-five patients with this compound, most of them severe cases of diabetes. The average caloric intake of these patients was 2,300, with 100 grams of carbohydrate; 40 being taken at 8 a.m., 40 at 11.30 a.m., and 20 at 5.30 p.m. Under similar conditions the patients were treated alternately with ordinary insulin and with protamine insulinate. Careful estimations of the blood sugar showed that expectations were fulfilled. The sharp fall of blood sugar usually seen three to four hours after an injection of insulin and the sharp rise a few hours later did not occur after protamine insulinate, the effect of which is exerted over a period roughly twice as long as that of insulin. Blood sugar fluctuations were thus diminished, glycosuria and the excretion of ammonia (acidosis) were reduced, and the risk of hypoglycaemia minimized. No local reaction and no protein reaction were observed. It was found most practicable to give protamine insulinate in the evening. In this way the risk of hypoglycaemia during the night was obviated, and the high level of sugar in the morning controlled. An injection of ordinary insulin in the morning was then as a rule found sufficient to control the large fluctuation of blood sugar during the day.

H. F. Root and his co-workers,[4] who have had an opportunity of giving protamine insulinate to fifteen patients, confirm Hagedorn's observation that, at present, this cannot be used exclusively in severe diabetes. As it does not exert a quick or powerful effect hyperglycaemia tends to occur in the forenoon and afternoon when protamine insulinate is given in the morning. These authors also point out the disadvantages of this compound: it is not indefinitely stable, and the protamine has to be added to the insulin for use during the ensuing few weeks; there is the mechanical annoyance of having to shake the compound each time before use; it cannot replace insulin in the treatment of diabetic emergencies; at present ordinary insulin must be employed at the same time. Finally, it must be emphasized that the work is still in the treatment of diabetic emergencies; at present be obtained commercially. Nevertheless, an important advance has been made in the treatment of diabetes; and the consolidation of this work, and the preparation of this and, perhaps, other products on a commercial scale, will be eagerly awaited by both patient and physician.

[1] *Klin. Woch.*, 1935, xiv, 1531.
[2] Ibid.
[3] *Journ. Amer. Med. Assoc.*, January 18th, 1936, p. 177.
[4] Ibid., January 18th, 1936, p. 180.

VACCINE FOR WHOOPING-COUGH

To readers of this *Journal* the outstanding points in the bacteriology and immunology of whooping-cough are familiar enough: the discovery of the bacillus by Bordet in 1906; the emphasis by Gardner[1] and co-workers, supported by Toomey,[2] on the importance of the haemolytic and toxic, or "active," type of bacillus; the statement (Krueger[3]) that the bacillus or material derived therefrom could be used as an antigen and would protect animals against a lethal dose of culture; the suggestion (Craster, *et al.*[4]) that the intradermal injection of vaccine causes a local allergic reaction of value in diagnosis or control; the use of convalescent blood (Bradford,[5] Jundell[6]) in an attempt to protect those exposed. The obvious outcome of this work was the employment of a vaccine in both prophylaxis and treatment, but the evidence for its utility is curiously conflicting. The results of a number of authors (Kundraditz,[7] Stallings and Nichols[8]) suggest that the vaccine not only offers protection against the disease but also materially hastens recovery of those already ill. J. Toomey, L. Sauer,[9] W. T. Benson,[10] N. D. Begg and M. F. Coveney,[11] are not convinced that vaccine has any therapeutic value, and the Council of Pharmacy and Chemistry of the American Medical Association in March, 1934, did not recognize the use of vaccine of any sort for therapy, and apparently has not changed its view since.

Hopes have naturally centred on prophylactic vaccination, which has been considered at length in a recent series of papers by L. Sauer.[9] Points therein that will cause thought are that of one series of 54,000 deaths from pertussis over 50 per cent. occurred in the first year of life; that children should be injected between the ages of 6 and 8 months; that a tedious course of six or eight injections is needed, 8 c.cm. in all, and 10 c.cm. for children over 3 years of age; that reactions may arise, but are not serious; that of all children exposed in an epidemic about one-quarter escape infection, even when unvaccinated. Finally, American immunologists favour the vaccination of children against pertussis when 7 to 12 months old, against diphtheria when 12 to 16 months old, and, later, against small-pox and scarlet fever. It may be expected that such an ambitious scheme of immunization would meet with opposition and protest, especially by parents—opposition that should be modified by a calm assessment of the dislocation of life at school and home, of the illness and anxiety and deaths, due to this group of diseases. In England we are faced with the deplorable fact that two to three thousand children die each year of whooping-cough; London alone provides some 40,000 cases. The critical reader, unconvinced by a good deal in the literature, will find certain results unforgettable. In 1933 H. and E. MacDonald[12] vaccinated two of their four sons, and five months later gave a live culture of *H. pertussis* intranasally to all four. The two unprotected suffered from typical whooping-cough; the other two remained in full contact with them but entirely escaped infection. Sauer vaccinated thirty children in twenty-four families, leaving thirty-one siblings unprotected. Within four years the thirty-one had all suffered from typical pertussis, while the thirty vaccinated children escaped. In a group of 1,209 vaccinated children sixty-two experienced intense exposure to infection in their homes, 152 others experienced a less severe extra-domestic or "casual" exposure by contact with infected children; of the whole group six contracted the disease. Sauer quotes this as a 90 per cent. protection. Kendrick and Eldering,[13] using up to five injections and 7.5 c.cm., vaccinated 712 children; sixty accidentally became exposed to infection and only four were attacked; among 880 comparable controls eighty-four were exposed and sixty-three suffered from pertussis. Madsen[14] obtained promising results.

While claims that are possibly premature or not based on adequate evidence must be discouraged there is every probability that when the proper dosage of vaccine is known we shall be able to protect children against whooping-cough, and that if claims to produce protection in animals (Krueger,[3] Teissier, *et al.*[15]) are confirmed a vaccine of proved potency will be available to other workers. Neither the Sauer vaccine—a phenolized suspension of haemolytic strains—nor the Krueger vaccine—made by grinding in a ball mill and filtration through collodion membrane (which represents, incidentally, a further incursion of patenting into this field of applied immunology)—was accepted for prophylaxis by the American Council. The *Journal of the American Medical Association*[16] is, however, somewhat less unyielding, and agrees—after recalling Madsen's promising results in the Faroe Islands and the work of Frawley,[17] Nichols and Krueger—that the evidence warrants giving vaccine to children between the time of exposure and attack in the hope of preventing the attack or of decreasing its severity; although Sauer states that most children require more than three months for complete immunization. In the lack of agreement amongst authorities, few people will disagree with W. W. C. Topley[18] that there is need for careful field trials, rigidly controlled, before wholesale immunization can be advocated. There is some lamentable flaw in our public health and social organization which provides no sufficient opportunities for the immunologist to discover how best to immunize and whether the eight or ten injections thought necessary by Sauer in his commendably cautious series of papers can be shortened by the development of more efficient vaccines.

[1] *Lancet*, 1932, i, 9.
[2] *Journ. Infect. Dis.*, 1935, lvii, 49.
[3] *Proc. Soc. Exper. Biol. and Med.*, 1932-3, xxx, 1097.
[4] *Medical Officer*, 1931, xlv, 179.
[5] *Amer. Journ. Dis. Child.*, 1935, l, 1803.
[6] *Acta Paediatrica*, 1933, xv, 1.
[7] *Med. Klinik*, August 10th, 1934, p. 1060.
[8] *Amer. Journ. Dis. Child.*, 1934, xlviii, 1183.
[9] *Amer. Journ. Pub. Health*, 1935, xxv, 1226.
[10] *British Medical Journal*, 1935, i, 657.
[11] *Lancet*, 1936, i, 82.
[12] *Journ. Infect. Dis.*, 1933, liii, 328.
[13] *Amer. Journ. Pub. Health*, 1936, i, 8.
[14] *British Medical Journal*, 1933, ii, 1177.
[15] *Journ. Physiol. et Path. Gén.*, 1929, xxvii, 549.
[16] *Journ. Amer. Med. Assoc.*, 1935, civ, 1443.
[17] Ibid., 1934, ciii, 960.
[18] *British Medical Journal*, 1935, ii, 174.

OESOPHAGEAL DISEASE IN CHILDREN

Dr. A. Brown Kelly has placed on record his experience of oesophageal disease in children whom he was asked to examine at the Royal Hospital for Sick Children in Glasgow.[1] The most conspicuous symptom is regurgitation, which is usually described as vomiting and is treated as such. When the obstruction is high, as in atresia, only a small quantity of food can be swallowed without producing regurgitation and exciting cough. When the obstruction is at the lower end, as in cardiospasm, and the oesphagus is much dilated, much food may collect before regurgitation takes place. These children thus never get enough food, and are always hungry and below the average in height and weight.

The abnormalities may show in various ways. One of these is distension of the oesophagus with atrophy of its walls and dilatation of the cardia, which is far more rare than dilatation of the oesophagus with thickening of the walls, and it allows an ebb and flow through the cardiac orifice. Another condition is congenital shortening of the oesophagus with a thoracic stomach, an abnormality that is not very rare. In this there is regurgitation which varies in frequency and degree. Dysphagia is aggravated by changing from liquid to semi-solid food, so that the child must be fed on liquid food beyond the normal age. Skiagrams show a characteristic picture of dilatation of the upper oesophagus down to the level of the seventh dorsal vertebra, where it suddenly contracts to form a constriction about half an inch in length. From the lower end of this there is a gradual widening, which produces another dilatation of variable size and shape reaching to the diaphragm and merging with the infra-diaphragmatic part of the stomach. Endoscopic examination reveals a condition corresponding to the appearance in the *x*-ray film. The naked-eye appearance of the lining is sufficient to distinguish the mucous membrane of the oesophagus from that of the stomach, and a swab applied to the stomach will show an acid reaction. The constriction seen in the film is the cardiac canal, which is subject to spasm, and the hiatus itself is abnormally wide. Stretching the cardiac canal with an endoscope or bougie relieves the symptoms. If the patient is left untreated oesophagitis and haematemesis may supervene. A variation of this condition is progressive narrowing and shortening of the oesophagus with hiatal hernia. One child in Dr. Brown Kelly's series displayed congenital stenosis of the oesophagus with recurring spasm and an ascending narrowing, the oesophagus being dilated above the stenosis. Relief has been obtained by the passage of bougies, and the child has reached the age of 13. Spasm of the lower end of the thoracic oesophagus and of the cardiac canal produces a characteristic appearance in a skiagram. The oesophagus, as in cardiospasm, is dilated, with a short, thin tail coming from the lowest part of the dilatation ; but the appearance differs from that of cardiospasm, because the dilated lower end of the thoracic oesophagus, when closed by spasm, does not rest on the diaphragm and the appendix does not pass through the diaphragm.

It thus appears that shortening of the oesophagus may be congenital or post-natal, or may begin before birth and continue to develop after birth. The factor which ultimately proves fatal in certain cases is the obstruction caused by an ascending fibrosis. Dr. Brown Kelly's paper is profusely illustrated with drawings and skiagrams, demonstrating the complex changes in this abstruse subject, which has been but little studied by pathologists.

[1] *Journ. of Laryngol.*, February, 1936, li, No. 2.

SURGICAL GRAFTS FOR CORONARY DISEASE

The heart has a rich anastomosis between the capillaries and precapillaries ; this applies to branches of the same coronary as well as to branches of both, and the older the individual the more complete is this anastomosis. There are also certain minor sources of blood supply available, in case of need, through the vessels of the structures that constitute the anchorage of the heart at its base ; but these can compensate to only a slight degree for serious obstruction in the coronary arteries. While, therefore, the natural anastomosis of the heart may protect it against injury even when there is complete obstruction of one of the main arteries or severe narrowing of two main branches, there is little to be expected from extra-coronary sources of supply. If by some safe procedure an artificial supply could be tapped some hope might be held out to those suffering from a crippling disease. Recent experiments show that the surgeon is as ingenious and as undaunted as ever in his attack on diseased organs. C. S. Beck[1] and C. S. Beck and V. L. Tichy[2] have demonstrated that after the provision by grafting of a collateral vascular bed consisting of parietal pericardium and pericardial fat, almost total obliteration of both coronaries, accomplished in several stages, was compatible with life, and that dye injected through the collateral bed penetrated freely into the myocardium. The anastomosis between the graft and the myocardium took place only when the latter was rendered ischaemic—that is, a physiological need was necessary for its development. In later work a flap of skeletal muscle was combined with the pericardial tissues, and at a suitable interval after the operation the complete occlusion of the right coronary could be carried out without fatality, but in the case of occlusion of the left coronary the protection afforded was slight. These results led to the trial of the method in a man aged 48, diagnosed as having coronary sclerosis and angina of nine years' duration. A flap of the left pectoralis major was sutured to the inner surface of the parietal pericardium ; this and the epicardium were roughened with a burr ; bundles of intercostal muscle and the medial edge of the pectoralis were attached to the outer surface of the parietal pericardium. Seven months after the operation the patient was working as a gardener, free from pain: he himself claims that he is cured. Subsequently, six other patients were operated upon, with a good result in one but only

[1] *Ann. of Surg.*, November, 1935, p. 801.
[2] *Amer. Heart Journ.*, October, 1935, p. 849.

slight improvement in another ; the remainder are too recent to comment upon.

Other animal experiments on cats and greyhounds have been made by L. O'Shaughnessy[1] using a graft of a pedicle of omentum brought through the diaphragm. Coronary ligature had previously been performed. Exercise tests suggested that the grafts were of functional value, and injections of dye demonstrated vascular connexions between graft and myocardium. According to Press reports the operation has also been performed on a man aged 64. The provision of a collateral supply of blood to the heart when the coronary arteries are diseased is a logical enough procedure. But from the practical point of view there is the objection that with moderate coronary disease such as shows itself by angina of effort many years of useful life without undue discomfort may be afforded by medicinal treatment and by the adoption of a few simple precautions. Again, excellent recovery may follow a single coronary occlusion, and it is doubtful if either of these types of patient would consent to operation. On the other hand, when the clinical condition is desperate with very extensive coronary disease, accompanied by, for example, angina decubitus or leading to gross heart failure, the operative risk would almost certainly be too great. In some of the experiments referred to above, grafts were placed over myocardial infarcts which had resulted from artificial coronary occlusion, but it seems clear that there is nothing to be gained by increasing the blood supply to such areas, in which the muscle is more or less completely replaced by scar tissue. Further reports must be forthcoming before others will feel justified in advising this method ; and, as with complete thyroidectomy for intractable heart failure or angina, many years' observation will be needed for adequate assessment of its value.

INCENTIVES IN INDUSTRY

In view of the rapid increase of monotonous repetitive work in modern industry the problem of discovering the best incentives for stimulating the workers and mitigating their boredom is one of great importance. The problem can be to some extent investigated by laboratory methods, and an inquiry of this character by Mr. C. A. Mace entitled " Incentives: some Experimental Studies," has been published by the Industrial Health Research Board.[2] The subjects of the first experimental test (a group of eighty-eight university students) were asked to perform a fairly simple arithmetical test for twenty days, and it was found that those of them who were given a fixed standard of performance to aim at made more rapid and steady progress than those who were merely asked to try and beat their previous performance. Another arithmetical test was carried out for seventeen days by twenty schoolboys, who were paid a small fee and bonus. It was found that those of the boys who got their bonus only on condition of surpassing a definitely prescribed standard improved very much more rapidly than those who were paid for surpassing their previous best performance. Again, an " aiming " test performed by ten university students for twenty-six days showed that if information were given suggesting an appropriate standard of work to aim at there was an immediate and substantial improvement in accomplishment. Finally, a " ball and slot " test, practised by thirty-four children for thirty-six days, showed that the group of children who were encouraged to aim at a specific degree of improvement did better than those who merely tried to do their best. The general conclusion derived from these experimental studies is well supported by the data obtained independently by another investigator, who made his observations in a factory. They suggest that operatives engaged in repetition work ought to have a definite aim placed before them in some such form as a bonus, which is earned whenever a certain standard of output is reached in each hour or day of work. The bonus should be graded according to the ability of the individual workers in such a way that it is always within their capacity, provided that they maintain a reasonable level of effort.

[1] *Brit. Journ. Surg.*, January, 1936, p. 665.
[2] Report No. 72. Medical Research Council: Industrial Health Research Board. H.M. Stationery Office. (1s. net.)

CORONERS UNDER REVIEW

The coroner and his court are a very old institution in England and have, on the whole, done difficult and indispensable work with fair efficiency. In recent years, however, much public criticism has been aroused, chiefly by the supposed unfairness with which the coroner's inquiry is conducted. The inquiry is not limited by strict rules of evidence and procedure, and it may happen that the coroner will go slightly beyond the strict bounds of an investigation and begin to regard himself as a judge. When the police suspect a person of murder and think they have a good case against him, they arrest him and bring him before a magistrate, and their allegations are made and tested by the strict rules of evidence. If the magistrate commits the prisoner for trial the prosecution have to prove his guilt beyond reasonable doubt ; every part of their case has to be proved ; irrelevant or inadmissible evidence is excluded ; and the accused may give evidence or not as he likes, and is considered to be innocent until a verdict of guilty has been returned. Still more important, he knows exactly what charge he has to answer and what evidence is being brought against him. In the coroner's court, on the other hand, a suspect who has not been arrested and charged may be compelled to attend on subpoena, or may not be present at all. In either case the present practice of the coroner's court allows a case to be built up against him, on testimony which may be second-hand or irrelevant. He may be compelled to give evidence and be severely cross-examined though no charge is made against him, for the theory is that the proceedings are not a trial but an investigation. He need not answer questions if he thinks the answer will incriminate him, but a refusal to answer will prejudice him in the eyes of the jury. If the case is a sensational one all this evidence is reported fully in the newspapers, and if eventually he comes before a criminal court the jury will have the questionable advantage of knowing in advance not only the evidence they will hear at the trial, but also a number of inadmissible and

perhaps highly damaging statements that have been made before the coroner. Proceedings before the coroner after a fatal road accident are often used by advocates to secure evidence which might be useful in a subsequent civil action, and to raise questions which have nothing to do with the issue under inquiry. Coroners' juries frequently apportion blame by way of rider, a practice which cannot be justified, as it is outside their proper function ; moreover, the person blamed may have had no opportunity of stating his own case or even of being present. Some coroners have habitually abused their immunity from defamation proceedings by criticizing or censuring persons of whose conduct they disapproved. Coroners have criticized hospital administration, the competence of medical officers, and the methods of treatment employed, and the persons so injured have no redress whatever.

It is a matter for satisfaction that the Departmental Committee on Coroners[1] has taken full cognizance of the British Medical Association's evidence and adopted most of its recommendations. In addition to a recommendation concerning the above-mentioned comment and criticism at inquests the Committee also recommends that there should be some rules of procedure for coroners' courts, that a coroner should preserve his official records during his term of office, and that a coroner should be given discretion as to the necessity of holding an inquest in cases where there is no doubt as to the cause of death, and also as to the necessity of viewing the body, all of which were put forward by the Association in its evidence. The Committee's recommendations are summarized in this issue at page 322. There are some respects in which they are perhaps not entirely satisfactory from a medical point of view. For instance, the Committee recommends that only solicitors or barristers should be made coroners. While it is undoubtedly desirable that the coroner shall have legal qualifications, it is nowadays almost essential that he shall also have medical ones. There are a large number of persons qualified for both professions, and the number would undoubtedly be increased if the double qualification were recognized as highly desirable in a coroner. Finally, the Committee recommends that post-mortem examinations shall be performed by skilled pathologists, and that modern and convenient mortuaries shall be provided. It refers in many passages to the place in reform of the proposed Medico-Legal Institute. Could not any steps taken in this direction be directed towards the larger aim of making the more important of the new mortuaries, as on the Continent, also centres of medico-legal research and training?

VIRUS DISEASES IN AUSTRALIA

Research into virus diseases occupies a prominent place in the sixteenth annual report of the director of the Walter and Eliza Hall Institute of Research, Melbourne. A survey of the incidence of psittacosis in Australian parrots has revealed that a surprisingly large proportion of these birds were infected, certain species even proving to be naturally infected in the wild state. The conditions among wild birds are parallel with those in California, there being a high incidence, mostly symptomless, among young birds, and many non-infective though diseased old birds. The lesions produced by the isolated virus strains corresponded closely with those described for strains defined in Europe and America during the epidemic of 1929–30. In monkeys the Australian virus produced severe illness with characteristic pneumonic changes, and instillation into the nose of the anaesthetized rat caused acutely fatal psittacosis pneumonia. Since the local virus is thought to be capable of inducing disease in man, medical practitioners are advised to look out for cases. The relations of Australian *x*-disease and the louping-ill virus, and of louping-ill in sheep to human poliomyelitis, are being investigated. A form of inapparent louping-ill in the rat seems to parallel the asymptomatic infection in children with poliomyelitic virus, which produces the specific antibodies found in the serum in most adults. The chorio-allantoic membrane of the developing egg has proved a useful medium, favouring the growth of psittacosis and mouse ectromelia in addition to that of other viruses. Many experiments have shown the possibility of indefinitely continued transmission from egg to egg, the virus multiplying within the superficial ectodermal cells of the membrane. The value of this " plating method " for viruses, analogous to that used in bacteriophage technique, has been heightened by the employment of older eggs, in which non-specific lesions are rare and slight, the individual virus foci are often much more numerous, and generalization is slower and death delayed.

WORLD REQUIREMENTS OF DANGEROUS DRUGS

The Supervisory Body, set up under Article 5 of the Convention of 1931 for limiting the manufacture of narcotic drugs, has now communicated to Governments through the Secretary of the League of Nations the estimated world requirements for 1936. Estimates had been furnished by fifty-nine countries and eighty-nine territories, but, in default of such returns, the Supervisory Body has established estimates for eleven countries and nine territories. The grand total of world requirement for morphine is 44,126 kilograms, but of this more than 30,000 kilograms are returned as being required for " conversion," chiefly into codeine, leaving 9,799 kilograms as the amount of morphine required " for use as such." Of heroin the total for use as such is 930 kilograms, being less than in the two previous years. Of cocaine the total required for 1936 is 4,503 kilograms, being slightly less than in the two previous years. The Permanent Central Opium Board reported that in twenty-seven cases during 1935 Governments had imported drugs—usually in small quantities—for which no provision had been made in the estimates which had been supplied. In such cases the embargo procedure laid down in Article 14 of the Convention becomes operative. The most striking feature of the statistics now published for 1936 is the great increase in the amount of morphine estimated as required for " conversion," and the divergence that there is between this amount and the total estimated requirements of the drugs into which morphine is converted.

[1] Report of the Departmental Committee on Coroners. London: H.M. Stationery Office. 1936. (Pp. 76. 1s. 3d.)

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some diseases of the digestive system met with in general practice.

THE TREATMENT OF ULCERATIVE COLITIS

BY

ARTHUR F. HURST, M.A., D.M., F.R.C.P.

The most important factors in the successful treatment of ulcerative colitis are patience and perseverance on the part of both doctor and patient. Even in early cases several weeks of strict treatment are generally required ; in chronic and late cases the patient may have to be in bed under continuous supervision for a year or more. It is natural that patient and doctor should wish to celebrate any improvement by relaxing the rigour of treatment. But it is essential to control by endoscopy any apparent improvement, as the disappearance of symptoms may precede the disappearance of the last trace of ulceration and inflammation by several weeks. Relapse is almost certain to occur unless treatment is continued until all signs of inflammation have disappeared.

Rest

The patient should be kept completely at rest in bed so long as there is any pyrexia and so long as more than two or three stools are passed in twenty-four hours. After that he may be allowed to get up for a warm bath and to lie on a couch during the day, but he must not take any more exercise than is involved in walking from one room to another until recovery is complete.

Diet

The small intestines are rarely involved in ulcerative colitis. It is therefore quite unnecessary to make any restriction in diet beyond the avoidance of pips and skins of fruit and fibres of vegetables. This is a matter of extreme importance, as the disease is likely to last for a long period, and too limited a diet not only results in loss of weight and strength, but the food taken may contain insufficient iron to compensate for the loss of blood in the stools, and microcytic anaemia then results. The anaemia and malnutrition, and particularly any deficiency in vitamins, aggravate the colitis and may lead to serious cutaneous and ocular complications, all of which respond rapidly to a change to a more liberal diet. Patients with ulcerative colitis often have quite a good appetite, and there is no reason for limiting their allowance of meat and other foods containing no indigestible residue. Fruit is best given in the form of strained juice and "fool," and green vegetables as purées.

Local Treatment

Except in the most acute stages of ulcerative colitis local treatment is often useful. The fluid should be run in through a soft catheter introduced only just beyond the anal sphincter. The quantity should depend upon the extent of the disease as shown by *x*-ray examination. If the whole colon is involved a pint and a half is needed ; when introduced slowly at a pressure not exceeding eighteen inches of water, it reaches the caecum without difficulty and is almost as effective as if given through an appendicular or caecal stoma. If only the pelvic colon and rectum are involved half or three-quarters of a pint are sufficient, and the patient should remain in a semi-sitting position so that the fluid cannot run into the more proximal part of the colon. The most useful solution is tannic acid, the strength being gradually increased from half to two grains to the ounce ; it should be retained, if possible, for half an hour. When the disease is localized to the rectum, the most effective treatment is to blow bismuth subgallate powder on to the mucous membrane through a proctoscope.

Drugs

Codeine.—When the diarrhoea is severe the patient is likely to become exhausted by want of sleep. A dose of codeine sufficient to keep the bowels from acting more than once in the night should be given at 10 p.m.

Belladonna.—In most cases the muscular coat of the colon is extremely irritable, and healing is much retarded by its continuous activity. Tincture of belladonna should therefore be given every six or four hours, the dose being gradually increased from five minims to the maximum the patient can take without getting his mouth uncomfortably dry.

Charcoal.—Pain is not a common complaint in ulcerative colitis. Colicky pains may, however, occur owing to distension with gas, especially shortly before the bowels act. This can always be relieved by giving a tablespoonful of charcoal two or three times a day.

Iron.—Most patients with ulcerative colitis are more or less anaemic ; thirty grains of iron and ammonium citrate should be given three times a day till the haemoglobin is at least 80 per cent. If the haemoglobin percentage is less than 70 per cent., transfusion not only improves the patient's general condition, but often greatly hastens the healing of the ulcers.

Serum and Vaccine Therapy

Believing that the majority of cases of ulcerative colitis are the result of infection with a dysenteric organism (*Guy's Hospital Reports*, 1935, lxxxv, 317) I have used polyvalent anti-dysenteric serum in treatment for the last fifteen years. In my first case the result was little short of miraculous.

A young man, aged 21, had been ill for over a year with severe diarrhoea and the passage of much blood and pus. When I first saw him on October 1st, 1920, he was very emaciated, having lost over three stone in weight during the previous six weeks ; he had a high temperature, was very anaemic, and had a sacral bed-sore. Sigmoidoscopy showed that the mucous membrane was severely ulcerated. An appendicostomy was performed the next day, but he rapidly became worse and appeared to be moribund when on October 18th he was given his first intravenous injection of polyvalent anti-dysenteric serum. By October 21st blood had already disappeared from the stools, which rapidly became more solid ; on the 23rd the sigmoidoscope showed that the mucous membrane was entirely free from ulcers. On November 1st the mucous membrane was perfectly normal. Except for occasional slight recurrences, rarely lasting more than a few days, he has remained well ever since, and was very fit when I last saw him in July, 1935.

After preliminary desensitization 20, 40, 60, 80, and 100 c.cm. of serum are injected intravenously on consecutive days; sometimes a few additional doses of 100 c.cm. are given. The treatment can only be undertaken safely in a hospital or nursing home, where the patient is under continuous supervision, owing to the possibility of delayed anaphylaxis. If the patient is treated at home 10 c.cm. of serum should be injected intramuscularly daily for about ten days; good results are sometimes obtained, though less frequently than with intravenous injections.

The great disadvantage of treatment with serum is the possibility of a dangerous reaction. An anaphylactic reaction may occur during the injection of serum, but it is occasionally delayed several hours. Prompt treatment with adrenaline, one minim of which should be injected every half minute, after an initial injection of three minims, until complete recovery takes place, is almost always effective. Rapid recovery is most likely in the early stages, but it is occasionally very striking even in the long-standing cases. More frequently the serum produces a certain degree of improvement, with the result that other treatment leads to recovery more rapidly than it otherwise would have done. In a small number of cases, especially the very chronic ones, the serum has no effect. Though the improvement which follows serum treatment is probably, in part, due to protein shock, especially in cases in which there is much general reaction, yet in many cases it is probably in part or entirely specific. Thus in one of my cases the serum was very effective, although no improvement had followed a series of injections of the same quantities of ordinary horse serum.

Jerwood (1921), Ryle (1928), Bindon Brew (1930), and many others in England, and Bell (1924) in Melbourne have obtained very satisfactory results with anti-dysenteric serum. Crohn of New York has several times reported on the good results he has obtained with anti-dysenteric serum, which he has now used for several years as the routine treatment for ulcerative colitis. The following is an abstract from a recent report on a follow-up of seventy-five cases reported by him with Rosenak (*Amer. Journ. Dig. Dis.*, 1935, ii, 343).

"Since 1921, following the suggestion of Arthur Hurst of London, we have employed the intravenous injection of polyvalent anti-dysenteric serum; this, regardless of whether dysentery organisms were isolated, or agglutins were or were not present in the patient's blood. . . . In order to determine whether the effect of this serum was a specific or a non-specific one, we attempted, in a number of cases, to duplicate the results by the intravenous injection of typhoid vaccine. . . . Other methods of treatment were tried at various times in the course of years, including autogenous vaccines of faecal organisms, Bargen's serum and vaccine, transfusions, etc., some with good results, many of them without any noticeable effect. . . . It soon became obvious that any protein agent which would produce a protein shock and a febrile reaction could bring about a beneficial change in the chronic course of this disease. . . . Those using Bargen's serum, and Bargen himself, have observed that the best results were seen where the serum created severe protein shock, indicating that the serum acted as a non-specific protein as well as a specific antitoxic agent. . . . Our personal experience convinced us of the superiority of the use of polyvalent anti-dysenteric serum. Whether the disease is a mild endemic dysentery or not, splendid results followed the specific serum method of treatment."

I have never seen the slightest benefit follow any form of vaccination, and in some cases the local condition has been definitely aggravated. Several American physicians have told me that they have been quite unable to confirm Bargen's enthusiastic reports about treatment with the vaccine or serum (so-called "ulcerative colitis serum") produced from his organism, which most bacteriologists both in England and in America regard as a non-pathogenic enterococcus.

After-treatment

The danger of recurrence is much reduced if treatment is continued until the sigmoidoscope shows no trace of inflammation, even if symptoms have already disappeared for some weeks. Associated conditions, such as oral and pharyngeal infections, and anal complications must be treated, as a relapse may follow an acute sore throat, or the development of a peri-anal abscess or a fistula-in-ano. The patient should keep permanently on a roughage-free diet and take sufficient paraffin to keep his stools soft.

Surgical Treatment

Forty patients with ulcerative colitis were admitted into New Lodge Clinic between 1921 and 1934.[1] None died in the Clinic, although in the large majority of cases the disease was of a severe character, and only three died after leaving it, in each case as a direct sequel of operation—appendicostomy, colostomy, and colectomy—the last in direct opposition to my advice, as the case was an acute one and it should have been obvious that a one-stage operation would prove fatal. Neither appendicostomy nor caecostomy was performed on any of the patients whilst in the Clinic, though one attributed his final recovery to an appendicostomy performed after he left. In four the operation had been performed before coming to the Clinic, but in each case without any benefit. As the whole of the colon can be satisfactorily washed out with a pint and a half of fluid introduced per anum, and as in many cases only the distal half of the colon is involved, it is clear that appendicostomy or caecostomy is rarely indicated.

A short-circuiting operation has been performed with success in three of my patients (including one of the Clinic series) for fibrous stricture. When, in very chronic cases, a large part of the colon has become disorganized, with the formation of fibrous strictures and multiple polypi, all potentially malignant, the ideal operation is, I believe, a temporary ileostomy followed by colectomy. The end of the ileum is cut across; the proximal end is brought to the surface in order to divert the faeces from the colon, and the distal end can either be closed or brought to the surface so that the colon can be washed with normal saline solution introduced by a tube passing through the ileo-caecal sphincter. After several weeks, when all active inflammation has disappeared from the colon, colectomy is performed; if endoscopy shows that there is no stricture within nine inches of the anus the lower part should be left so that the ileum can be anastomosed with it at a later stage. I have had the operation performed five times with one death (Dunhill, Hughes, Ogilvie, Gaymer-Jones); in only one of the four was it necessary to remove the rectum and to leave a permanent ileostomy. Any polypi in the rectum and the remaining part of the pelvic colon are destroyed by diathermy cautery. The ultimate result in each case was completely satisfactory.

REFERENCE

[1] Hurst, A. F.: Prognosis of Ulcerative Colitis, *Lancet*, 1935, ii, 1194.

It is now just ten years since the Department of Clinical Investigation and Research was founded in Manchester under the joint auspices of the University and the Royal Infirmary. Under the directorship of Dr. J. F. Wilkinson it has made rapid progress and has contributed much to medical knowledge, particularly with regard to the treatment by liver therapy and hog's stomach of pernicious anaemia and kindred conditions. In addition to support from such bodies as the Medical Research Council, the Department has received a grant of £300 a year for three years from Boots Pure Drug Co. Ltd.

CORONERS' LAW AND PRACTICE

THE DEPARTMENTAL COMMITTEE'S REPORT

The Home Secretary, just under a year ago, appointed a Departmental Committee under Lord Wright to inquire into the law and practice relating to coroners, and to report what changes, if any, were desirable and practicable. On January 17th last the Committee reported, and its report was published on February 7th. The following are some of the important changes which the Committee considers should be made.

The first question the Committee considered was whether the office of coroner should be retained at all. The conclusion reached was that its abolition would be neither practicable nor desirable. The Committee investigated the Scottish system, which is often compared favourably with the English ; and while recognizing its advantages, it concluded that this could not be adapted to English conditions in the absence of a centralized system of public prosecution like that in Scotland.

Inquests on Suicides

The Committee's witnesses agreed almost unanimously that the procedure at inquests on suicides should be reformed. Where publicity is given to the private affairs of the deceased serious harm may be done to living persons ; publicity given to the method of suicide may lead to imitative suicides ; and the practice of inquiring into the state of mind of the deceased, and of returning verdicts of " suicide while of unsound mind," serves no useful purpose and may have undesirable effects. The Committee was impressed by the consensus of opinion that the present publicity given to inquests on suicides causes much hardship and harm, and recommends that such publicity should be limited to a statement of the name and address of the deceased and the verdict. It attacks the fiction of " unsound mind," and recommends that the verdict of " felo de se " should be abolished, and the jury shall simply find that " the deceased died by his own hand." No inquiries, it holds, should be made into the state of his mind except for the bare purpose of determining whether he took his own life, and no reference should be made in the verdict to his state of mind.

"Trial" by Coroners

At inquests where murder has been suspected there have been on occasion spectacular " experimental trials " before the coroner. The Committee unequivocally condemns this practice. It believes that the root of the trouble lies in Section 4 (3) of the Coroners Act, 1887, which requires the jury, if they find that the deceased died by murder or manslaughter, to name the persons responsible. The coroner now faces a well-nigh insoluble problem : on the one hand the law seems to oblige him to press to the utmost limit the examination of a suspected person, and on the other hand he desires to treat the suspect fairly according to the rules of common law. If this provision of the statute is abolished then in the few cases where the police, in spite of rigorous investigation, have not seen fit to arrest anyone, the coroner will no longer have to ask the jury to fix the guilt on any particular person, nor will anyone be charged on the coroner's inquisition. The Committee adds that where there is a suspicion of murder, but not enough to justify a charge against an individual, the legal rules of evidence should be strictly observed. If a person is suspected he should not be put on oath unless he desires to give evidence ; if he gives evidence the questions addressed to him should be directed simply to eliciting his statement, and he should not be cross-examined on the consistency of his evidence with that of other witnesses. In Scotland, the Committee remarks, a suspected person is never questioned. In order to prevent the coroner's proceedings from hampering the police by ventilating evidence, it should be enacted that, when there is suspicion of murder, the coroner shall adjourn the inquest, on the request of the chief constable, for fourteen days, and continue to adjourn it from time to time for like periods if he is still requested to do so.

Deaths on the Road

These recommendations apply also to cases of suspected manslaughter, the commonest type being death caused by the dangerous driving of a motor vehicle. The police have in some cases preferred to await the result of the inquest before deciding what action to take. The preponderant view of the police witnesses was, however, that the police should decide of their own initiative whether or not to institute criminal proceedings, and whether the charge should be one of manslaughter, dangerous driving, or careless driving. At present, if the coroner's jury commits for manslaughter, it is difficult for the police to limit their charge to dangerous driving if they wish to do so, and if the jury's finding has exonerated all parties their position is even more difficult. Moreover, the coroner's court is ill adapted for inquiries into criminal responsibility in cases of this kind, where the law is often difficult and a correct appreciation of it is necessary. The police are in the best position to investigate the facts.

The Committee also condemns the practice of making use of inquests in order to elicit facts which have a bearing on civil liability but are not strictly relevant to the cause of death. Interested parties are frequently represented at inquests solely with a view to procuring a rider which will exonerate one party or place some share of the blame on others. Advocates often try to turn the coroner's court into a preparing ground for a civil action. The Committee recommends that the limits of the coroner's jurisdiction in all these respects should be made clear.

Riders and Opinions

The habit of coroners' juries of bringing in verdicts or riders of censure or exoneration should, in the opinion of the Committee, be prohibited. It is against the principle of natural justice that a person should be condemned in proceedings to which he is not a party. The jury is not reasonably certain to reach a right decision when no specific charge is brought against anyone, where the person censured may not have had an opportunity of being heard, and where his conduct is no more than a side issue. Even where moral blame is disclosed beyond doubt the Committee still regards it as improper to express that blame in the verdict. If a criminal offence has been committed the police or some voluntary body are the proper parties to take proceedings. The Committee excepts recommendations of juries designed to prevent the repetition of a fatal accident, provided they are not made lightly and ignorantly.

For the same reasons the Committee strongly condemns the tendency of some coroners to animadvert upon the conduct of persons who come under their notice. A man has at law a right to preserve his reputation unassailed, but the coroner enjoys absolute privilege for any defamatory remarks he may make, because his court is a court of record. The Committee also heard evidence showing that coroners have censured or criticized hospital staffs on professional matters, such as the administration of a hospital, the status and competence of its medical officers, and the methods employed in treating its patients. Persons censured in this way have no redress whatever. The Committee considers that the practice should be brought to an end. It does not propose an amendment of the law, but believes that its recommendations, taken as a whole, will tend to put a stop to the practice. It would be dealt with also by the Rules Committee which the report proposes to establish.

The coroner may, under the present law, dispense with an inquest if, as a result of a necropsy, he is satisfied that one is not necessary. He may not, however, dispense with an inquest if there is reasonable cause to suspect that the deceased has died a violent or unnatural death. The Committee recommends that in the case of death from a simple accident, where the coroner is satisfied as to the cause of death and there are no other circum-

stances which call for an inquest, the coroner should have discretion to dispense with one. In most cases of deaths from alcoholism an inquest seems to the Committee to serve no useful purpose, and it considers that cases of at any rate chronic alcoholism might well be regarded as "not unnatural" deaths. It agrees with the view expressed by the Industrial Division of the Home Office that an inquest should be held when there are reasonable grounds for suspecting that an industrial process in which the deceased has been employed was responsible for the death.

Anaesthetic Deaths

Coroners vary in their practice when dealing with cases of death under an anaesthetic. Anaesthetists complained to the Committee that coroners tend to place undue emphasis on the part played by anaesthetics in deaths during or following operative treatment. They stated that the operating surgeon is rarely called to give evidence at the inquest, and that a common verdict is that "the patient died from an anaesthetic given in a proper manner for a proper operation," although in fact death may have been due to surgical shock, loss of blood, or some other cause. They insisted that it is unfair that a medical practitioner called upon to administer an anaesthetic in the course of his duty, and perhaps in a desperate emergency, should be summoned, as it were, to defend himself in a public court.

Many coroners hold inquests on every case of death in these circumstances, and, since these inquests receive widespread publicity, an unfortunate position results. The fact that an inquest is held at all suggests to the public the possibility of faulty work, and the prominence given to the anaesthetist's share in the operation may affect his practice adversely. As a result anaesthetists and operating surgeons may be tempted to refrain from performing dangerous operations which offer the only hope of prolonging life, or to remove patients too soon from the operating table, if by doing so they can avoid an inquest. A further point is that garbled newspaper reports may lead patients to refuse necessary treatment or give rise to an unnecessary fear of operation.

Suggested Procedure

The Registrar-General's regulations require registrars to report to the coroner any death after an operation, necessitated by injury, or under an operation, or before recovery from the effects of an anaesthetic. From a medical point of view, the Committee says, it is difficult to justify the selection of cases on these lines. Although there may be little difference between the effects of an anaesthetic and those of a full dose of morphine or one of the barbiturates, yet a death under an anaesthetic may be regarded as requiring an inquest, while a death due to a sedative may not. The position is further complicated by the modern practice of premedication, the effect of which lasts longer than that of the anaesthetic. According to present practice an inquest would often be held if the patient died under the effect of the anaesthetic, but not if he died under the effect of the sedative. The British Medical Association and the Association of Anaesthetists proposed that, where the coroner and the relatives were satisfied that there had been no neglect or other circumstances which would warrant the holding of an inquest, the coroner should be given discretion to dispense with one.

The Committee considers that coroners should be informed of all deaths under, or in consequence of, an anaesthetic or during an operation, but that there should be a definite provision of law that, where the operation has been performed and the anaesthetic given with reasonable care, a death should not be regarded as violent or unnatural simply because an anaesthetic was given or an operation performed. The coroner should, however, be obliged to have regard to any views expressed by the relatives. The Committee does not recommend that it should be made obligatory by statute to report such deaths to coroners, but it recommends that administrative steps should be taken to ensure that the authorities of hospitals and nursing homes should report to the coroner any deaths under anaesthetics or operations, together with such information as the coroner may desire. The coroner should then consider whether he requires a necropsy. This normally would be performed by a pathologist outside the hospital, but where haste was essential by the pathologist of the institution. If the coroner does not require a necropsy he should inform the hospital authorities without delay, so that they may, if they wish, make arrangements for an examination for scientific purposes.

Post-mortem Examinations

The Committee accepts the view that post-mortem examinations should be made by pathologists with special experience in this work. It does not believe that any place in the country is so remote that an experienced pathologist cannot be employed. It recommends that coroners should normally employ pathologists whose names appear on a list kept by the Home Office and compiled with the assistance of a medical advisory committee, acting in consultation with medical schools and hospitals throughout the country. If a medico-legal institute were to be established its diploma might properly become a qualification for appointment to the list. The statutory fee for performing a necropsy should be raised from the present two guineas to three guineas, and local authorities should exercise their existing power to prescribe fees for pathologists so as to enable them to pay more in certain cases. Travelling expenses should be allowed for attendance at the mortuary and the inquest. The clinical and post-mortem evidence should be collated, and for this purpose the coroner or pathologist should be empowered to ask the practitioner who attended the deceased to supply a report on the case or to be present at the necropsy, for an appropriate fee. In criminal cases a chief officer of police should, the Committee thinks, be empowered to request a coroner, at any time before the inquest is over, to order a post-mortem examination, and in such a case the coroner should choose the pathologist after consultation with that officer. In order that the work of skilled pathologists may not be frustrated by the lack of adequate mortuary accommodation, the Committee trusts that local authorities will provide mortuaries which are adequately equipped and designed, and conveniently situated for the requirements of the coroner and the public. It considers that the routine work necessary before and after the necropsy should be performed by the pathologist's assistant, not by police officers.

Rules and Discipline

One grave disadvantage of the present system is that coroners have no general rules of procedure. The Committee thinks that there ought to be a general code of rules for coroners' courts, and recommends that a statutory body should be set up to compile, and afterwards to alter as required, a series of rules of procedure, analogous with the long and complete codes which govern the practice of the High Court and of the county courts. The statutory body would be chosen by the Lord Chancellor and the Home Secretary, and would include representatives of the Coroners' Society, the Bar, the solicitors' profession, the British Medical Association, and the general public.

Coroners are at present practically irresponsible; there is no appeal from their decisions and no redress for injury to reputation caused by them in the course of their duty, and they are only removable from office for extreme and practically unknown forms of misbehaviour. Supervision, says the Committee, should be exercised by an independent statutory body constituted in the same way as the proposed Rules Committee, which would be empowered to deal with complaints against coroners. The Lord Chancellor should also have a definite responsibility to remove a coroner who has shown himself unfit for his office.

Coroners should be obliged to give reasonable notice of the time and place of intended inquests, particularly when death is due to an industrial accident. The Committee sees in the present practice of viewing the body no specific advantage to counterbalance the expense and distress involved. It would therefore give the coroner

discretion to dispense with the viewing, provided that he satisfied himself of the existence of the body and that it could be viewed if need be—that is, that it was not buried or irrecoverable. The Committee considers that the London County Council should determine the places at which coroners should hold inquests, which means in practice that coroners should be obliged to use the courts provided. It sees no reason to disturb the existing position outside London, but expresses disapproval of the holding of inquests in unsuitable places, such as rooms in public-houses.

Evidence and Records

Apart from an inquest where criminality is suspected, the Committee does not think it would be practicable to insist on the strict observance of the legal rules of evidence. It does not approve of the proposal to compel the coroner to allow any interested person who so wishes to be represented by counsel or solicitor, except in inquests involving certain industrial accidents or diseases. Some record should, it says, be kept of the evidence, and its recommendation is that, where the coroner is required to have a jury, he shall be obliged to take full notes of the evidence ; and, when sitting alone, he shall keep a record of the main points. Copies of these notes should be available to any person showing proper cause on payment of a fee. The keeping of records should be supervised by the Rules Committee. Coroners should be given full charge to regulate the conduct of their inquests and maintain the dignity of the court. Juries should be chosen from the jury list, and coroners should take a greater interest in the empanelling of juries, and ensure that jury service is more evenly borne by all classes of society. Where the deceased is a woman or child, at least two women should serve on the jury.

Qualifications for Coronerships

Qualifications for appointment as coroner should be primarily legal, and candidates for office should satisfy tests not only of their knowledge of law and their practical experience, but also of their acquaintance with medical jurisprudence. The proposed Medico-Legal Institute might act as an examining body, and small coronerships might be merged gradually in larger districts. Only solicitors or barristers should be appointed, for the Committee considers that the sifting of evidence requires legal training, and that a coroner without medical knowledge would be fully informed of the medical aspects of the case by the medical witnesses. The Committee recognizes the valuable work which has been done by medical coroners, but considers that legal training is of greater importance. Deputy coroners should be appointed independently in the same way as coroners.

ROYAL MEDICAL BENEVOLENT FUND

This is the centenary year of the Fund, and a special appeal is being made for new subscribers to carry on the work commenced a hundred years ago and for donations towards the Centenary Fund. Cheques should be sent to the Honorary Treasurer, Royal Medical Benevolent Fund, 11, Chandos Street, Cavendish Square, W.1.

At a recent meeting of the committee nine new applicants were assisted and fifty-four grants were renewed to beneficiaries on the books on the Fund—in all £1,680 was voted. The following particulars of a few of the cases helped indicate the kind of work undertaken.

Widow, aged 28, of M.B. who died in May, 1935, leaving her with two infant children and a capital sum of £380. The Fund and its auxiliary, the Ladies' Guild, will do what is possible to help.

Widow, aged 78, of M.R.C.S. who died in 1890, was found to be living on £66 a year. The Fund granted £25, thus raising the income to £91, which is the limit allowed for retaining the State old age pension of £26.

Daughter, aged 37, of M.R.C.S. who died in 1908. After her father's death she was handed over to Dr. Barnardo's Home, where she was educated from 9 to 15 years. She then had to earn her own living, and went into domestic service. As the applicant is a dwarf she is unable to do any strenuous work, and this limits her power of earning. It is estimated that her earnings for the last month at odd jobs only amounted to £2. Fund voted an allowance of £26.

PRENUPTIAL HEALTH SCHEDULES

The Eugenics Society, through a committee, has drawn up a prenuptial health schedule, with explanatory leaflets, with a view to encouraging people to seek medical examination before marriage. It is desired not only to prevent marriages which are likely to result in the birth of children with hereditary disease, but also to improve the prospects of married happiness by detecting early symptoms of disease and instituting treatment, or by eliciting and, if possible, resolving those fears and anxieties which not infrequently beset persons contemplating the married state. The general practitioner is increasingly consulted in such cases, and he may be at a loss for guidance ; at any rate it will be useful to him to have a standard of reference. The schedule (procurable from the Society, 69, Eccleston Square, S.W.1, at the cost of one shilling), which is not in any sense a certificate, is in three parts, the first two of which are to be filled in by the applicant, and the third by the doctor. In the first part the family history, from such particulars as are available, and in the second part the personal history of the applicant are set out. Although about thirty questions are given, relating to possible physical abnormalities, nervous troubles, and sex problems, the form will not take the average intelligent person more than five minutes to complete. The questions are carefully framed to avoid anything of a self-committal nature ; nothing specific is asked about venereal diseases, and in the group of questions on psychological and sex problems provision is made only for the answer " Yes " or " No." The third part, to be filled in and retained by the doctor, and not to be shown to the applicant, follows more or less the customary form for life assurance examination, except for the reference to any sexual deviations and, in women, to pelvic measurements.

A confidential document has also been prepared for the help of the examining doctor, explaining more fully what the questions are designed to elicit, and mentioning some books on the hygiene of marriage which might be recommended to the applicant. It is emphasized that in making this move the Eugenics Society is in no way trying to override the functions of the general practitioner ; on the contrary, the general practitioner or family doctor is made the central agency in the operation of the scheme ; it is only on his application that the schedule will be forwarded. If the practitioner is in doubt as to the significance to be attached to some finding he will, naturally, seek the opinion of a specialist. On specifically genetic problems, and on those only, the Eugenics Society has appointed a small board of specialists, but, of course, the society cannot undertake the role of consultant in ordinary cases. The whole scheme and the literature accompanying it have been framed with great care to avoid the tender susceptibilities with which such a subject is surrounded. The committee, which is to be complimented on its work, had Dr. R. Langdon-Down as its chairman, and its members included Lord Horder, now the president of the society, Sir Humphry Rolleston, the former president, Dr. Stella Churchill, Dr. Maurice Shaw, Mr. B. S. Bramwell, the society's chairman of council, and Dr. C. P. Blacker, its secretary. It is emphasized that the whole procedure is voluntary. Obligatory prenuptial examinations, such as exist in Germany and Turkey, would probably not find favour in this country. But, being voluntary, the scheme is subject to the drawback of all voluntary measures—that they are resorted to in the main by conscientious people who would find some other means of solving their problems if this were not available, while others go their irresponsible way. There is also the difficulty that for most people the approach to marriage is viewed in an emotional setting in which such a thing as a preliminary medical examination may appear irrelevant, and to some even profane. Perhaps there would be more likelihood of the acceptance of the idea if the appeal were made, not so much to the prospective partners, as to their parents, who might be encouraged to insist upon such an examination as a passport to the relationship of son-

in-law or daughter-in-law, and even make it a condition of parental consent in the case of a minor. In France it is the custom of parents to demand that a son-in-law shall be a first-class "life" in an assurance company, this being regarded as a certificate of physical fitness. But the scheme of the Eugenics Society not only includes physical conditions, but enters the region of psychology and sex adjustment. Many psychological and sex difficulties are undoubtedly cleared up by a frank talk with the doctor, and it should not be forgotten that in some other cases, whether that frank talk takes place or not, the difficulties disappear in the experience of marriage itself.

POSTING PATHOLOGICAL SPECIMENS

The Postmaster-General has drawn our attention to the fact that pathological and bacteriological specimens sent for examination or analysis have been observed in the post which are not packed in accordance with the postal regulations. Where this happens there is a risk of infection to Post Office servants and a further risk of the contamination of the mails in the event of leakage of the contents of such packets. It has been thought advisable, therefore, to recapitulate the Post Office Regulations for postal transmission of pathological specimens.

As a general rule deleterious liquids or substances cannot be accepted for transmission by post, but an exception is made where such liquids or substances are being sent for investigation to a recognized laboratory or institute under a public health authority, or a qualified medical practitioner or veterinary surgeon in the United Kingdom. Such packets must be sent invariably by letter post, and on no account by parcel post. The following conditions must be observed.

Post Office Regulations

Any such liquid or substance must be enclosed in a receptacle which is hermetically sealed or otherwise securely closed, the receptacle itself being placed in a strong wooden, leather, or metal case in such a way that it cannot move about and with a sufficient quantity of some absorbent material, such as sawdust or cotton-wool, so packed as to prevent the possibility of any leakage in the event of damage to the receptacle. The packet must be conspicuously marked "*Fragile, With Care*," and must bear also the words "*Pathological Specimen.*" Any package of this kind found in the parcel post or any packet in the letter post which is not packed and marked in this way will be stopped and destroyed, with all its wrappings and enclosures. A further point is that any person who sends by post a specimen packed in any other way than is provided in these Regulations is liable to prosecution. Where receptacles are supplied, as is so frequently the case, by a laboratory or institute they should be submitted to the Postal Services Department of the General Post Office in London in order to ascertain whether they are regarded as complying with these regulations.

SUPPLY OF MEASLES ANTISERUM

Owing to the great prevalence of measles at the present time numerous requests have recently been made for serum. The Immunization Committee of the British Medical Association last year[1] called attention to the urgent need for organizing supplies, but no adequate measures appear to have been taken. The London County Council maintains a supply, but this is required for its own needs and is not available to the general practitioner. The London Fever Hospital does its best to maintain a stock of convalescent serum, but the serum is difficult to obtain, and it is supplied only for infants exposed to infection or children already suffering from some other serious disease. The Wellcome Physiological Research Laboratories, Beckenham, have for some years past received convalescent or adult blood from a number of medical officers of health or other authorities and prepared serum therefrom, which is returned to the doctors supplying the blood.

[1] *Supplement* to the *British Medical Journal*, 1935, i, 286.

FOTHERGILL TESTIMONIAL FUND

SECOND LIST OF SUBSCRIBERS

The following is the second list of subscriptions to the testimonial to Dr. E. Rowland Fothergill received in response to the letter published in our columns of January 18th (p. 130).

	£	s.	d.
Amount previously acknowledged ...	262	14	6
Lord Dawson of Penn (London)	5	0	0
R. Langdon-Down (Teddington) ...	10	10	0
G. T. Willan (Hove)...	1	1	0
G. C. Trotter (London)	1	1	0
J. C. Loughridge (Belfast)	1	0	0
J. Armstrong (Ballymena)	1	0	0
W. W. Shrubshall (Burgess Hill) ...	2	2	0
T. Brice Poole (Hove)	3	3	0
J. Manson (Warrington)	2	2	0
H. S. Souttar (London)	5	5	0
C. O. Hawthorne (London)	5	5	0
Bolton Local Medical and Panel Committee)	5	5	0
J. Mills (Ballinasloe)	1	1	0
Isle of Wight Local Medical and Panel Committee	1	1	0
G. Morgan (Brighton)	1	1	0
Mid-Cheshire Division	1	1	0
Portsmouth Division	5	5	0
W. C. Chaffey (Hove)	2	2	0
W. Gosse (Wimborne)	5	0	0
J. Henderson (Glasgow)	2	2	0
E. Kaye Le Fleming (Wimborne)	5	5	0
Halifax Panel Committee	2	2	0
Sir Humphry Rolleston (Haslemere) ...	5	5	0
Shropshire and Mid-Wales Branch ...	2	0	6
S. Watson Smith (Bournemouth) ...	2	2	0
H. C. Jonas (Barnstaple	5	0	0
J. B. Miller (Bishopbriggs)	1	1	0
B. E. A. Batt (Bury St. Edmunds) ...	1	1	0
R. G. Gordon (Bath)	3	3	0
Berks Panel Committee	5	5	0
West Suffolk Panel Committee	10	10	0
L. Kilroe (Rochdale)	5	0	0
C. L. Batteson (London)	1	1	0
J. C. Lyth (York) ...	1	1	0
A. K. Smith-Shand (York)	1	1	0
W. W. A. Kelly (York)	1	1	0
Wakefield, Pontefract, and Castleford Division	3	0	0
H. E. Barrett (London)	1	1	0
J. A. Brown (Birmingham	1	1	0
H. S. Beadles (Romford)	5	5	0
	£386	7	0

Cheques should be made payable to the Fothergill Testimonial Fund, and addressed to the Treasurer, Fothergill Testimonial Fund, British Medical Association, B.M.A. House, Tavistock Square, London, W.C.1.

Ireland

Fire at Queen's University, Belfast

A serious fire broke out in the department of anatomy, Queen's University, Belfast, just after 4 p.m. on February 7th, with considerable damage to the buildings. The fire originated apparently in a preparation room underneath the terraced seats of the anatomy lecture theatre, and soon had a firm hold on the woodwork; this part of the University is almost a hundred years old, and the woodwork was therefore very inflammable. On the first warning fire extinguishers were used, but without effect, and a call was made to the Belfast Fire Brigade, whose prompt arrival was a great factor in preventing extensive destruction. Much anxiety was expressed for valuable museum specimens on the ground floor under the lecture theatre, including a large number of the preparations of the late Professor Johnson Symington, which are a lasting and memorable example of his patience and skill. Although the floor was burned through the museum cases were only subjected to water, and the specimens are, so far as is known, almost all intact. From the lecture theatre the fire spread to the upper story, and Dr. R. H. Hunter's private laboratory suffered considerably. Here again there was cause for anxiety; Dr. Hunter's unique collection of serial sections of embryos and developmental specimens, and his valuable personal library and papers, are kept in this laboratory, and since he was in London at the time attending a meeting of the Anatomical Society he could not direct proper salvage. The dissecting theatre and osteology museum were unaffected. The cost of restoration is as yet unknown, but the opportunity will now be taken of providing the department of anatomy with a modern lecture theatre and retiring rooms, although many former students of Queen's will regret the tragic passing of the scene of much of their medical education.

England and Wales

The King's Fund and the King

The following resolution has been passed at a special meeting of the Management Committee of the King's Fund.

That, on behalf of the General Council and all connected with King Edward's Hospital Fund for London, the Management Committee record their profound sorrow at the death of His Majesty King George V, and their deep sense of the loss which the King's Fund has thereby sustained. On becoming its President in 1901 he took up whole-heartedly the work which King Edward VII had begun, gave it for nine years his close personal attention, and was intimately associated with all its various activities. As its Patron during his own reign he exercised a general supervision over its affairs from 1910 until the appointment of His present Majesty as President in 1919, and afterwards showed by frequent inquiries and messages of encouragement his constant personal interest in all its subsequent developments. For the whole of these thirty-five years his concern for its welfare and progress was a continual inspiration alike to the council, the committees, the officers, and the staff. They therefore mourn the loss not only of a beloved Sovereign, but of an unfailing friend to the King's Fund, to the hospitals and all who serve them, and to the sick and suffering for whose sake they exist. They respectfully tender an expression of their deepest sympathy to His Majesty King Edward VIII, whose long years of work as their President will always be remembered with gratitude, and offer him the humble assurance of their loyalty and devotion.

The following gracious reply has been received from His Majesty:

Buckingham Palace.

I am deeply grateful to the General Council and to all connected with King Edward's Hospital Fund for London for the message of sympathy which they have addressed to me on this sad occasion. I am well aware of the constant interest which for the last thirty-five years my dear Father, as President and as Patron, took in the activities of the Fund. I am glad that my tenure of office as President since 1919 has enabled me to gain a first-hand knowledge of its administration, and I can assure you that I shall continue to watch its progress and welfare with feelings of genuine and unabated interest.

EDWARD R. I.

L.C.C. Hospitals

It has been reported to the London County Council that cases occasionally occur in which an employer or an insurance company asks for permission to have a patient in hospital examined by the employer's or company's own medical officer. It is proposed that, subject to the consent of the patient or his parent or solicitor, no objection shall be taken to such examination, provided the visit is made at a convenient time and that no visitor other than the examining doctor is present. No charge is to be made for the facilities granted, unless the Council's medical officers are called into consultation. Nearly three years ago the Council approved the terms and conditions on which medical officers at hospitals, schools, and institutions should give certificates, medical reports, or information in other form for, or on behalf of, patients treated in respect of accidents. It is proposed to purchase for the gynaecological and surgical departments at Hammersmith Hospital (the hospital associated with the British Post-Graduate School) 250 milligrams of radium at a total estimated cost of £2,150.

Lectures at the British Post-Graduate School

The following courses of lectures have been arranged at the British Post-Graduate Medical School: in the Department of Medicine: four lectures by Dr. Gordon Holmes on "Cerebro-spinal Syphilis," on March 2nd, 9th, 16th, and 23rd, at 2.30 p.m. In the Department of Surgery: six lectures on "The Surgical Aspects of Dyspepsia" by Sir James Walton, on March 20th and 27th, April 3rd, 17th and 24th, and May 1st, at 5 p.m. In the Department of Obstetrics and Gynaecology: thirteen lectures on "Recent Advances in Obstetrics and Infant Hygiene," beginning on March 2nd, when Dr. Leonard Colebrook will discuss puerperal sepsis. On March 4th and 11th Mr. Eardley Holland will deal with haemorrhage of late pregnancy; on March 9th and 16th Professor F. J. Browne will speak on toxaemias of pregnancy; on March 18th and 25th and April 1st Mr. Aleck Bourne will discuss disproportion and difficult labour; on March 20th Dr. E. R. Roberts will speak on radiology in obstetrics; and on March 27th, April 3rd, 17th, and 24th Dr. Alan Moncrieff will deal with "The Hygiene of the Newborn Child." These lectures begin at 3.30 p.m. All the lectures are intended for regular students of the school, but a limited number of tickets are available, without fee, to other practitioners, and applications for these should be addressed to the Dean, British Post-Graduate Medical School, Ducane Road, W.12, by February 23rd for the courses on cerebro-spinal syphilis and recent advances in obstetrics and infant hygiene, and by March 13th for the course on the surgical aspects of dyspepsia.

National Physical Education

Dr. J. Alison Glover, senior medical officer of the Board of Education, delivered four Gresham Lectures on Physic last week at Gresham College, E.C., on some aspects of exercise, physical education, and swimming. He traced the evolution of the existing position from the Greek palaestra and gymnasia to the present time, with special reference to the more recent revivals in Germany and Sweden as well as in Great Britain since 1861. He discussed the medical aspects of posture and carriage, illustrating his points by lantern slides and cinematograph films, and emphasizing the great importance of dealing with malnutrition before attempting to secure active muscular development. The work in progress in schools under the guidance of the Board of Education was similarly illustrated and described, and the relative values of different varieties of exercises were estimated. Special points brought out concerned the measuring of the effects of exercise, the value of the exposure of the skin to air and of exercise in middle life, strain of the muscles and heart, and the intimate connexion between strain and infective foci. The lines on which exercise rightly selected and regulated might function as a preventive of disease were set out. Special attention was paid to swimming in view of the fact that it exercised all the muscles, increased metabolic activities, and stimulated the skin. The effects of the various strokes were defined, conclusions were drawn as to the teaching of swimming and diving, and the possible dangers of these were pointed out. In the concluding lecture Dr. Glover emphasized the necessity for the various bathing places to be guarded hygienically with respect to their ventilation, equipment, and water supply. He discussed the design of baths and stressed the importance of preserving the clarity and bacteriological safety of the water. He detailed the methods of purification of the water in swimming baths, noting the value of continuous filtration systems and of chemical and other treatments of the water.

Manchester Royal Infirmary

It is stated in the annual report of the committee of the Manchester Royal Infirmary that plans have been prepared for a four-story building at the southern end of the present out-patients' department. The building, which will be simple in design, will be of ferro-concrete and glass. Dr. Oscar Faber is collaborating with the architects in its erection. The new building will house the school of massage and the massage and electrotherapy departments. The ground floor will be devoted to the work of the orthopaedic department, providing accommodation for orthopaedic out-patients and for the fracture clinic. The work of this clinic has expanded since its inception, and has caused much congestion in the accident-room during the past twelve months. It is hoped that this overcrowding will be relieved, and a further advantage will be the placing of the whole of the massage department in one unit. At present massage work is carried out in widely separated parts of the Infirmary.

Reports of Societies

PHYSIOLOGICAL FACTORS INFLUENCING THE ACTION OF INSULIN

At a meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on February 11th, Dr. DOROTHY HARE presiding, a discussion was held on "Physiological Factors Influencing the Action of Insulin."

The Influence of Diet

Dr. H. P. HIMSWORTH said that the introduction of insulin into the treatment of diabetes effected a revolution in the clinical course of the disease, but not a revolution in the sense that it altered theoretical ideas. The existence of insulin had been foreseen, and when it became available it fulfilled the expectations. But shortly after the introduction of insulin a revolution occurred in a more complete sense of the word—namely, the introduction of high carbohydrate diets—a measure completely opposed to theoretical knowledge and completely unexpected in its clinical results. Why was it that on giving carbohydrate the tolerance of sugar apparently improved and the efficiency of the insulin received was increased? Several workers observed that rats on a diet containing high carbohydrate were more sensitive to insulin than rats on low carbohydrate: the former had convulsions relatively quickly after receiving insulin; the latter convulsed slowly, if at all. The speaker described an experiment in which twenty healthy men were given a diet under strictly controlled conditions, and it was shown that, if a series of doses of glucose were given, as the sugar tolerance improved the sensitivity to insulin increased also. The factors which increased insulin action also improved sugar tolerance. To what was this correlation between diet and insulin action due? He indicated how certain non-dietetic factors—such as a change of reaction of the blood or the possibility that the beneficial effect of high carbohydrate diet might be due to ketosis—had been eliminated. Which, then, of the factors of the diet was responsible for the change of tolerance?

There were various possibilities: calorie value, protein content, fat content, carbohydrate content, ketogenic and anti-ketogenic ratio. He related experiments in which all these were eliminated except carbohydrate content. Normal sugar tolerance was determined by the absolute amount of carbohydrate received in the diet, and this was the factor which determined the sensitivity of the body to insulin. By giving more carbohydrate it was possible to increase sensitivity both to injected insulin and to insulin secreted by the pancreas. If a subject were relatively insensitive to insulin, symptoms of hypo-insulinism—that is, diabetes mellitus—would result, even if the supply of pancreatic insulin were adequate. The insulin-sensitive patient if given more insulin would have his metabolic derangement corrected, but the insulin-insensitive would show signs of hypo-insulinism; the insulin from his pancreas, though normal in amount, would not act sufficiently to prevent the occurrence of that condition.

Pituitary Function

Mr. H. P. MARKS said that the changes following an injection of insulin were, first, the primary lowering of the blood sugar level, and, secondly, the restoration to the initial level. The former could be studied in the spinal eviscerated cat, where the disappearing sugar was accounted for as glycogen deposited in the muscles, and by increased combustion. Corresponding changes were not observed in the isolated perfused liver.

In the intact animal insulin caused, first, a disappearance of sugar, just as in the eviscerated cat. Then followed, in the normal animal, a restoration of the blood sugar to the initial level, commonly attributed to discharge of liver glycogen under the action of adrenaline, known to be secreted during this phase. In the absence of the adrenal medulla the recovery phase was delayed or entirely absent. A similar condition was seen also in the absence of the pituitary gland, although secretion of adrenaline was not lacking. It must therefore be concluded that the liver glycogen was rendered resistant to mobilization by adrenaline. Conversely, treatment with (anterior) pituitary extract rendered the liver glycogen more readily mobilizable. Apart from this, the pituitary might possibly antagonize also the primary blood-sugar-lowering action of insulin.

Dr. Marks also referred to the "tropic" action of the pituitary on the thyroid, pancreas, and adrenal medulla. Claims had been made that the pituitary exercised a controlling influence over the adrenal cortex. To summarize, it seemed that the anterior lobe might affect insulin response in two distinct ways. It might accelerate recovery from insulin hypoglycaemia, and it might also exert a direct inhibitory effect on the primary hypoglycaemic action of insulin.

The Adrenal Factor

Dr. LEVY SIMPSON addressed himself to the proof of the secretion of adrenaline during insulin hypoglycaemia, to the part played by the cortex and medulla in normal carbohydrate metabolism, and to the effect on such metabolism of medullary tumours. He said that it was with some diffidence that he spoke on the relation of adrenaline to insulin in carbohydrate metabolism, but he felt encouraged to continue on two grounds. One was that in this particular subject it was a decided advantage not to know too much about it, because too much knowledge was apt to lead to confusion. Again, the battle-ground of carbohydrate metabolism had been so actively engaged during the last twenty years that it was difficult to make any one statement for which adequate experimental backing could not immediately be found. A good deal of the conflict of evidence was due to the fact that different results were forthcoming with different species and different ages of animals, and with animals taken under different conditions. In order to make things simple he had chosen those experiments which fitted into a certain presentation of the subject satisfying to his not too critical mind.

He showed diagrammatically what he conceived to be a fundamental circle. The process was from glycogen of the liver to glucose of the blood, from glucose of the blood to glycogen of the muscle, from glycogen of the muscle to lactic acid, and from lactic acid to glycogen of the liver. It was important to remember that lactic acid was the end-product of glycogen breakdown in the muscle. If an injection of adrenaline were given what happened was that there was a glycogen breakdown in the liver and glucose was sent into the blood, the glucose was converted into glycogen of the muscle, and the glycogen of the muscle broke down into lactic acid. Adrenaline, therefore, would form that complete circle. It was very easy to prove that with adrenaline there occurred a decrease in the glycogen of the muscle; its breakdown into lactic acid was very well established. The general assumption was that insulin retarded this glycogen breakdown of the liver into glucose, and it also accelerated the process of glucose formation into glycogen of the muscle. Probably, again, it had a direct action on the glucose molecule, causing combustion. An injection of adrenaline would produce an increase in the respiratory quotient and a raising of the metabolism; it did not follow that it had a direct action on the glucose molecule. Some workers stated that the function of the adrenal cortex was to regulate carbohydrate metabolism.

In an adrenalectomized animal the liver glycogen and the muscle glycogen fell and the blood sugar was low. In Addison's disease it was well known that there was often a chronically low blood sugar, and this might occur when the lesion was in the adrenal cortex and not in the medulla. Some workers had found that insulin would apparently bring the liver and muscle glycogen values back to normal. In animal experiments, in half the depancreatized animals there was this return to normal glycogen values, but in the other half there was not. In pancreatectomy the liver glycogen was markedly falling, the muscle glycogen was also falling, and the blood sugar was increased. If one took a pancreatectomized animal and then removed its adrenal glands one might appear to bring it back to normal, but that was not always so. If more than the blood sugar were

considered it would be found that the picture was not only as bad as it was before, but even worse, the liver and muscle glycogen having doubly fallen. Therefore adrenalectomy only to some superficial extent compensated for pancreatectomy, and that also was what clinical evidence would lead one to suppose. Some weeks ago he had demonstrated that adrenaline was secreted during insulin hypoglycaemia in man, and at first he thought that this was a new finding, but later he learned that many experiments had been made on animals, and some on man, which had elicited that this secretion took place. He touched finally on some work he had done on ephedrine (which gave in the blood similar changes to those found with adrenaline, though lasting for longer periods) in relation to normal and low blood sugar.

The Thyroid Factor

Dr. M. W. GOLDBLATT remarked that it was fourteen years since insulin was given to the world, and a vast amount of work had been done on animals, on diabetics, and on normal human subjects, yet the present interested audience and the variety of opinion were evidence that as yet it was not known how insulin acted. Whether they carried out animal experiments or "tortured innumerable diabetics with all sorts of incomprehensible diets," they had to admit in the end to a feeling that they had been injecting a certain thing, observing a series of phenomena, and then saying that because those phenomena always followed such administration therefore that was the action of the thing administered. After a good many years of experience and working with insulin, he felt that most of them had "missed the boat" altogether, and he was not going to claim that in talking about the thyroid factor he had caught it himself. He felt that there was still an unknown factor to be elicited.

The relation between the thyroid and insulin was perhaps of a comparatively minor character. It was well known that many observers had found a diminution of insulin tolerance in many cases of hyperthyroidism. Myxoedematous patients were said to have an increased tolerance, though he thought they had all seen myxoedematous patients with normal tolerance. The general view was, however, that the thyroid had in fact an influence in the direction of diminishing tolerance, whereas the absence of the thyroid tended to increase tolerance. But in the clinical method of examination so many other factors came in that it was difficult to be absolutely certain. One wanted for an examination of this sort an animal not markedly affected by the operative procedure, and it was possible, in the rabbit, to remove the thyroid without the animal being in any sense a "sick" animal. He showed by curves that in the thyroidectomized animal the growth was not significantly different from the normal. The animal showed a marked increase in sensitivity to insulin. The injection of one unit of insulin per kilo produced the usual drop and recovery. That recovery was shown also in the normal "starved" animal, but the thyroidectomized "starved" animal went into convulsions. What impressed him in the curves for the two animals was that until the recovery or convulsion stage they were almost identical. There seemed to be in the first response to insulin no difference as between the thyroidectomized and the normal animal. Where they differed was in the period in which the one went into convulsions and the other into recovery. What was the cause of this insulin hypersensitiveness? Was it a diminution in the response of the adrenal mechanism, or the immobilization of the glycogen in the liver so that it could not get into the thyroidectomized "starved" animal, or the lowered effectiveness of the sympathetic nervous system? He suggested that it was due to the involvement of the sympathetic, in the sense that the sympathetic was less responsive than in the normal animal. He described experiments which indicated this lowered responsiveness, though it did not hold good of every sympathetic mechanism of the body. He suggested that in the thyroidectomized animal which was hypersensitive to insulin the sympathetic nervous system, in so far as it was concerned with carbohydrate exchanges in the body, was at a lower level of activity.

SURGICAL CATGUT

At the meeting of the Section of Surgery of the Royal Society of Medicine on February 5th Sir WELDON DALRYMPLE-CHAMPNEYS read a paper on sterilized surgical catgut, and exhibited a cinematograph film illustrating the various stages in its manufacture, sterilization, and packing. The subject, he said, had suggested itself to him owing to the recent occurrence in rather rapid succession of a number of cases of post-operative tetanus, either certainly or probably due to "home-cured" catgut. As one whose duty it had been at the Ministry of Health to supervise the manufacture and sale of sterilized surgical ligatures and sutures under the Therapeutic Substances Act and Regulations, whether prepared in this country or imported, he felt that the time had come to make the facts known to surgeons, to point out the difficulties attending the sterilization of catgut, while retaining its important physical properties, and to stress the dangers of material inefficiently sterilized.

Surgical catgut properly so-called was prepared from the small intestine of the lamb. In the course of manufacture all the tissues of the intestine were removed with the exception of the submucosa. The raw material, or "runners," as it was called, was first soaked to make it soft and pliable, and then the lumen of the intestine was split longitudinally with a very sharp knife. The next operation was to scrape off the inner and outer layers of the intestine from the "ribbons" into which the gut had been split, leaving only the submucosa. The ribbons were next measured and divided into suitable lengths for spinning, two or more ribbons being twisted together to form a string, the gauge of the finished gut depending upon the number of ribbons spun together. The strings of gut were then dried under tension, and polished, afterwards being graded by measuring their calibre by means of a gauge of some kind. If hard, slowly absorbed gut was required, the strings at this stage were immersed in a chrome bath.

The Sterilization Process

Some manufacturers of catgut adopted the practice of partial sterilization before spinning; and gut treated in this way, but not subjected to a sterilizing process after spinning, was often sold as "internally sterile" or "partially sterilized" catgut, and did not come under the control of the Therapeutic Substances Act. Unfortunately, purchasers of such catgut were apt to assume that the product required less sterilization than raw catgut, and some wound infections following the use of catgut sterilized by hospitals for their own use were, he believed, directly attributable to this belief.

The processes for the sterilization of spun catgut could be divided into categories according to the sterilizing agent employed. Heat was the most efficient and reliable agent, provided that the physical properties of the catgut could be preserved unimpaired. Solutions of iodine had been very largely used; the speaker detailed some precautions which were necessary if this method was employed. The efficacy of mercurial salts for sterilization had been greatly overrated, mostly as the result of employing inadequate tests for the sterility of the finished gut. Such solutions, so far as catgut was concerned, were more bacteriostatic than disinfectant, though they undoubtedly had some disinfectant action on the exterior of the catgut. Hydrogen peroxide was an efficient sterilizing agent, but by reason of its swelling effect upon spun gut it was never employed by itself, but was usually reserved for treating the wet gut as a preliminary to the action of iodine. Essential oils had been largely used by hospitals for the sterilization of catgut for their own use, but they had a negligible action on spore-bearing bacteria.

After completing his account of the processes by a reference to the sealing and labelling of the filled containers, the speaker discussed ways in which catgut might become recontaminated between the completion of the sterilization process and the sealing of the container. This might come about: (1) by the handling of the catgut for winding the lengths on slats before introducing it into the container, and it was for this reason

that sterilization inside the container was highly desirable; (2) by the access of air-borne organisms through the open ends of the containers before sealing (here he illustrated some of the means, such as rubber gloves and face mask worn by the operatives, and a glass cover to the sealing table, by which this source of contamination might be avoided); and (3) by the use of unsterile containers, stoppers, and filling solutions.

Tests for Sterility of Catgut

He next passed in review the sterility tests laid down in the regulations. The container was opened with sterile precautions, the filling solution poured away, and the whole of the contents placed in a test tube containing sterile distilled water and incubated at 37° C. for twenty-four hours; then it was transferred to a tube containing a solution of 1 per cent. sodium thiosulphate and 1 per cent. crystallized sodium carbonate in distilled water, and underwent incubation under the same conditions, the whole sample afterwards being removed without washing and examined for the presence of micro-organisms by the aerobic and anaerobic methods prescribed. A licensee was required to carry out such sterility tests on not less than 1 per cent. of the material constituting a batch, and the control tests carried out on samples by the licensing authority from time to time were, of course, identical with these.

The speaker then reviewed the research work on the sterility of sterilized surgical catgut carried out by R. O. Clock of New York, T. J. Mackie of Edinburgh, and W. Bulloch and his collaborators in London. Of Clock's work he said that his tests were designed to find out if the gut was absolutely sterile, and they could hardly be regarded as practical tests for everyday control. Mackie's investigations, reported in 1928 and 1929, were well worth reading in their entirety. In the part which dealt with post-operative tetanus, experiments to determine the resistance of bacterial spores to a large number of physical and chemical agents were described. Mackie's experiments to ascertain the effectiveness of heat as a sterilizing process were, unfortunately, very limited in their scope.

The Ministry of Health as licensing authority was concerned only with the control of sterilized surgical catgut manufactured or imported and its conformity with the sterility tests laid down in the Therapeutic Substances Regulations. It was satisfied that these tests, together with inspection, ensured a reasonable margin of safety to the surgeon and his patient. At the same time the researches to which he had referred had received most careful consideration, and the question of substituting other sterility tests for those now in use in order to meet such criticisms as had been made was constantly borne in mind by the Ministry.

Post-operative Tetanus

After glancing at the physical properties of catgut intended for surgical use, principally tensile strength and flexibility, and degree of absorbability in the tissues, Sir Weldon Dalrymple-Champneys spoke of certain cases of post-operative tetanus which had lately come to the Ministry's notice. At a hospital in the North three cases (one fatal) had occurred. The catgut used was bought by the hospital "raw" (that is, unsterilized), and was sterilized at the hospital by boiling for half an hour in xylol and then storing in spirit. An examination at the Ministry of Health laboratory showed that some of the dry catgut before "sterilization" contained *B. tetani*, and some of the catgut after such sterilization, although the presence of that organism was not demonstrated, was shown to be unsterile. Four cases (two fatal) had also occurred at a hospital in the South. Here the origin of the infection was less easy to elucidate, as commercially sterilized catgut as well as catgut sterilized at the hospital was employed, and no record was kept of the particular kind of catgut used in each individual operation, but the theatre sister stated that in one of the fatal cases the catgut sterilized at the hospital had probably been employed and might very well have been used in the other fatal case and in one of the non-fatal cases. The method of "sterilization" employed at this hospital was, in the case of plain catgut, immersion in oil of cloves for fourteen days followed by storage in absolute alcohol for a minimum of eight days, and, in the case of chromicized catgut, immersion in a 1 in 250 solution of biniodide of mercury in absolute alcohol for eight days. A rather inconclusive attempt was made to ascertain the source of infection in one of the fatal cases, and although proof of infection by "home-cured" catgut was lacking, the weight of evidence was heavily in favour of such a conclusion. Thus while the commercially sterilized catgut, some of which might have been used at the operation, had consistently given negative sterility tests for many years, the methods of sterilization employed at the hospital had been shown experimentally to be quite ineffective in killing *B. tetani* spores.

In view of the fact that so-called sterilization methods for catgut similar to those he had just described were still employed by many hospitals in this country, he appealed to surgeons to inquire carefully into the methods adopted for the sterilization of the catgut used by them at operations, and to bear in mind that the efficient sterilization of catgut was far from simple, but that many brands of efficiently sterilized catgut were available, and that post-operative tetanus and other serious infections could almost certainly be prevented by their use.

Discussion

Professor WILLIAM BULLOCH said that his first connexion with this subject dated back to many years ago when a number of infections at the London Hospital were ascribed to the use of catgut. He then realized that it was a subject which must be studied in the most thorough manner, and for a period of four or five years he went through the whole of the processes on a huge scale, testing 100,000 ligatures in order to discover what was true and what was false in the literature. The result of his work on the subject was published as a Medical Research Council Special Report, No. 138, "The Preparation of Catgut for Surgical Use," in 1929. He was extremely grateful for the way in which the Ministry of Health, following that report, had taken the matter up. There was no doubt that the condition of catgut to-day was much better than it was six years ago. With regard to the question of post-operative tetanus as the result of catgut, he believed this to be a bogy. He had tested 17,420 catgut ligatures, and had never found the organism. During the last thirty years at the London Hospital 165,906 major operations had been performed in the theatre under a general anaesthetic, and only two cases of post-operative tetanus had been reported, and in one of these it was kangaroo tendon which had been used. In other words, the chance of tetanus occurring in these circumstances was about 1 in 160,000.

Professor JAMES MCINTOSH said that cases of post-operative tetanus did occur, and the isolation of the tetanus organism from the wound was made, but the tetanus might arise from various causes, and the catgut was not necessarily incriminated. Dr. PAUL FILDES could not agree that tetanus in catgut was a bogy, but if too much stress were laid upon it other causes of post-operative tetanus might be overlooked. After all, the positive evidence against catgut was extremely meagre. He believed that he himself had acquired a special facility in detecting the tetanus organism, but never once had he found it in surgical catgut. There were other tetanic conditions which were due to medical procedure—for example, quinine tetanus and vaccination tetanus—and a great deal was known about these cases, but as for post-operative tetanus he believed that a good many more cases occurred than appeared in medical literature.

Dr. JOHN BEATTIE said that what the surgeon wanted was a suture which would stand up to a certain amount of tension and undergo successfully fair tests for sterility. During the last year or two various methods other than heat had been suggested for sterilization, one of these being nitrate of silver in dilute solution, producing a catgut which was believed to be not only sterile, but of sufficient tensile strength to stand up to the demands of the surgeon. It appeared that by this method the little spores might be encased inside the gut with a layer of metallic silver. It was too early to say whether these experiments were likely to reach a successful conclusion,

but so far none of the operation wounds had broken down, whereas wounds had broken down under the same conditions when the raw catgut had been used. The economic situation of the small hospital had to be borne in mind in deciding upon some means of sterilization which should be rapid and efficient and not too dear. He was prepared to agree that tetanus was only a bogy so far as Professor Bulloch's hospital (London Hospital) was concerned, but wound infections, whether tetanus or not, did occur frequently at hospitals which used catgut not prepared under rigid conditions. Dr. V. D. ALLISON referred to some experiments he had been undertaking at the Ministry of Health, which had shown that the use of a more exacting technique such as the employment of a medium producing tryptic digestion of the gut would sometimes bring to light the presence of a few viable anaerobic spores. As Sir Weldon had pointed out, catgut issued dry to be sterilized before use was not sterile, and sutures prepared from such catgut under suitable conditions proved fatal to laboratory animals when injected into them. The sterilization of a dry form of catgut should not be left to the control of the resident hospital staff, as it had been in some cases. Catgut was inherently a non-sterile substance, and it would be an admirable thing if a substitute could be found.

Lord HORDER said that evidently some bacteriological experts failed to confirm the assumption that catgut was responsible for the cases of post-operative tetanus that had been observed. He wondered whether the same applied to post-operative gas gangrene. He had not himself been brought into contact with post-operative tetanus, but he had had the misfortune to see five cases of post-operative gas gangrene, and his surgical colleagues, who had been naturally very much concerned, had assumed that it was catgut again which was responsible for these calamities. One of the cases was that of a colleague of his own, who died forty-eight hours after a cholecystectomy. Assuming the major premise that catgut was responsible, to what extent was surgical technique dependent upon catgut as against other forms of ligatures? On attending operations he was struck by the individual preference of his surgical colleagues for catgut on the one hand or for silk on the other. He knew eminent surgical technicians who always avoided catgut. But was the avoidance of catgut by some of their surgical colleagues a matter of pure technique or was it due to a fear that some such disaster as post-operative tetanus might arise?

Mr. W. S. DICKIE said that during the last thirty years certain cases of post-operative tetanus had come to his knowledge, all of them from areas where the tendency of the local technique was to use very heavy grades of catgut. It had usually been in these heavy grades that the tetanus organisms or spores were found. Heavy catguts were notoriously hard to sterilize. Mr. THOMAS CARWARDINE said that many years ago he instituted the xylol method, which Mayo Robson afterwards made so prominent. He pleaded that all surgeons should make their own ligatures. He had for thirty-five years prepared his own, using xylol, at first doing the sterilizing himself and afterwards arranging for it under his strict supervision. He had never seen a case of post-operative tetanus or anything approaching it, and he had never been able to indict the catgut for any suppuration which occurred.

Mr. SAMPSON HANDLEY (from the chair of the Section) declared himself unorthodox in that he hardly ever used catgut ; he employed it only when driven to do so. He preferred unabsorbable wool ligatures, which, if sterilized immediately before use by boiling and used out of an antiseptic solution, were rarely followed by the inconveniences which were supposed to result from unabsorbable ligatures. He inherited his practice with regard to catgut from Sir John Bland-Sutton, who never used it if he could avoid doing so.

Sir WELDON DALRYMPLE-CHAMPNEYS still held that there was enough evidence for the factor of catgut in post-operative tetanus, and it could not be dismissed as a bogy. While he agreed that in such careful hands as those of Mr. Carwardine the method of making his own ligatures might be thoroughly justified, such precaution could not be predicated of all surgeons in like circumstances.

RADIOLOGY IN DISEASES OF THE EAR

At the meeting of the Section of Otology of the Royal Society of Medicine on February 7th a discussion took place on the value of radiology in diseases of the ear.

Mr. W. STIRK ADAMS began by describing the radiology of the ear as a specialty within a specialty: its diagnostic value depended on the degree of skill of the radiologist and the quality of co-operation between him and the otologist. In revealing the anatomy of the middle ear and mastoid it was frequently of the greatest help, as, for example, in showing a normal middle and internal ear in those cases of congenital failure of patency of the external auditory canal, in showing the type of development of the mastoid antrum and air cells in patients under treatment for acute and chronic inflammation, and in showing the anatomical position of the lateral sinus and the size of the jugular foramen. In helping to estimate the changes in acute inflammation it was also useful, showing the degree of involvement of the mastoid air cells, bone destruction in the mastoid septa, and bone destruction in the petrous tip. In chronic inflammation of the mastoid it assisted in showing the normal development of the mastoid on the opposite side, enabling an estimate to be made as to whether a primary or a secondary sclerosis of the mastoid was present. It would show the presence of a large cholesteatoma ; but its value in deciding the presence of a small one was doubtful. In the unhealed cortical mastoid operation its help was needed to show whether mastoid cells had been overlooked, and an even greater help could be given in some intracranial complications after a radical mastoid operation. In other infections of the ear, such as tuberculosis, it might help to decide the extent of involvement. In general diseases associated with deafness it had shown changes in the temporal bones in Schüller-Christian disease. In showing widening of the internal auditory meatus, or absorption of adjacent bone, from eighth nerve or angle tumours, it had long been used in neurology, and in addition it was of the greatest help in tracing the cause of a pain referred to the ear from lesions in the dental arches, mandibular joint, and accessory nasal sinuses.

Technique and Interpretation

Mr. T. E. CAWTHORNE spoke of the technique of radiology of the temporal bone, whose radiological appearance he discussed under the headings of normal, non-suppurative, and suppurative conditions. He emphasized the value of x-rays of the mastoid in aural suppuration. The general feeling in this country was that the limitations of the method outweighed its advantages ; but, provided too much was not expected of it, its increasing use would lead to a greater appreciation of the pathology of aural suppuration and to greater accuracy in diagnosis. In many cases of mastoiditis showing radiographic evidence of extensive bone destruction the clinical diagnosis was obvious without x-ray examination. Even so, to be able to know the degree of cellularity of the temporal bone and the position of the sinus, tegmen tympani, and mastoid antrum before operating might be of great assistance to the surgeon. Increased co-operation between the otologist and radiologist should lead to the more frequent use of x rays in ear disease, and in consequence to a greater appreciation of their value.

Mr. M. MITMAN said that the radiological changes observed in the mastoid cells were mainly three: a loss of definition of the cells ; an opacity, or diminution in transradiancy, of the mastoid process ; and a loss of intercellular septa. The last was evidence of a destructive change—an osteomyelitis of the mastoid process. It indicated a stage in the disease in which recovery without operation was highly improbable ; in other words, it was a definite indication for operation. It was, however, a rare finding and a late one. In the vast majority of cases clinical evidence of the necessity for operation was present long before this change could be detected. The loss of definition and the opacity produced a veiling or shadowing of the mastoid cells, which was the most common pathological change seen in radiographs. It was not, however, pathognomonic of " mastoiditis " in the commonly accepted sense of the term. He had

observed the change in every case of suppurative otitis media which he had examined. He had had the opportunity of observing or learning of the subsequent history of a large proportion of the cases thus examined, and the majority recovered without operation. The inference was that in every case of otitis media there was an inflammatory process involving the mucosa of the whole of the middle-ear cleft from the Eustachian tube to the tip of the mastoid process. In every case veiling of the mastoid cells could be observed on *x*-ray examination. In his experience the radiograph did not readily differentiate those cases in which the mucosa of the mastoid process recovered spontaneously (otitis media) from those in which the pathological changes advanced to a stage requiring operation (mastoiditis).

Discussion

Dr. S. GILBERT SCOTT said that there was a type of latent mastoiditis in which the patient complained of a certain amount of pain or tenderness. That was a type of case in which *x*-ray examination was most valuable. Mr. T. B. LAYTON said that he thought some of the radiographic work brought forward had furnished a pathological explanation of what had been clinically proved—namely, that paracentesis did not save a mastoid operation. Personally he doubted whether it ever did; if it did, it was only in rare cases. It was not the mere suppuration of the mucous membrane which meant a mastoiditis; it must mean some form of osteomyelitis; but was it to be imagined that no case of osteomyelitis of any degree would not recover unless there was surgical intervention? An inflammation of bone in the early stages must be a recoverable condition in the same way as in soft tissue. What was commonly called mastoiditis must mean an osteomyelitis which had got to a stage where it would not recover without surgical intervention. There must be a large number of cases of inflammation of the middle-ear cleft in which there had been an osteomyelitis which had recovered with sclerosis. The work done during the last ten years on the radiography of the middle-ear cleft had brought about a change in one's conceptions of the surgery of the mastoid.

The point raised by Mr. Layton, which was a little aside from the main theme, was discussed by, among others, Mr. A. R. TWEEDIE, Mr. HERBERT TILLEY, and Mr. SOMERVILLE HASTINGS. The last-named said that he was sure that a good many of the cases which were diagnosed as mastoiditis and on which operations were done in the ordinary way would get well if left alone. When there was merely an opaque mastoid, a mastoid with diminished translucency, and bone trabeculae were intact, it did not indicate, other things being equal, a need for operation, but if the bone trabeculae were lost, then it seemed to suggest that, there being absorption of bone in the region of the trabeculae, there might also be absorption of bone leading into the interior of the cranium, and in that case he would operate.

FUNCTIONAL AMENORRHOEA

At the annual meeting of the North of England Obstetrical and Gynaecological Society, held in Manchester on January 24th, Dr. K. V. BAILEY read a paper on functional amenorrhoea, especially of the secondary type, in which he dealt particularly with the operation of extroversion of the ovaries as a curative measure. He reported a series of sixteen cases so treated in conjunction with hormone therapy.

Dr. Bailey stated that in this series the cause of the secondary amenorrhoea was most probably primarily ovarian or secondary to inadequacy of the governing pituitary hormones. He had so far considered it unjustifiable to operate on primary amenorrhoea when obvious pathological causes were not apparent. In this type of secondary amenorrhoea, which was fairly common, general treatment and endocrine therapy resulted in no permanent benefit, and questions of sterility, obesity, and premature senility arose. In the more highly strung types there was loss of weight, with serious nervous symptoms. Dr. Bailey referred to Kaufmann's recent work on hormone therapy in secondary amenorrhoea, the results of which were encouraging, though the failures with small doses were manifest. In some of Kaufmann's cases which had resisted treatment menstruation had been initiated by adequate doses, but had failed to continue spontaneously after cessation of the treatment owing to the persistence of basic ovarian insufficiency. This was due, in Dr. Bailey's view, to the absence of ovulation, which was itself progressively prevented by pathological changes resulting from a primary hormone insufficiency. In his series these changes had appeared as multiple cystic distensions penetrating into the deeper zones towards the hilum, with destruction of the more mature follicles, or as fibrotic and hyaline changes in the tunica and stromal tissues, when the condensation was so great that ovulation was impossible. He believed that these changes, once developed, were permanent, and that regeneration was impossible. The operation of extroversion of the ovaries was based upon these facts, being an attempt to assist maturity and ovulation in the remaining follicles by facilitating their approach to the surface. The outlook in the cirrhotic type of ovary was poor, and there was marked diminution in the size of the organ. The technique of the operation seemed to be at first sight wrong, since a raw surface was deliberately produced in the pelvic cavity, but this raw surface faced directly downwards towards the pouch of Douglas, and was not in contact with any peritoneal surface, not even that of the uterus. The normal surface of the ovaries presented upwards towards the abdominal cavity. At laparotomy, a wedge with its base at the periphery was excised sagittally from the cystic ovary, the apex being carried down to the region of the hilum. In this way the ovary was reduced in size by the removal of grossly cystic and functionless tissue, and inversion of the cut edges was prevented, thus facilitating extroversion. For this last reason also a thin wedge was similarly excised from the cirrhotic ovary. The cut surface was then fully exposed, and it was sutured near the mesial and lateral ends so as to turn the organ partially inside out, except that the fibrous strength of the tissues of the medulla and hilum prevented this, the result being more in the nature of a flattening outwards of the cut halves of the ovary, with adhesion between the outer surfaces close to the middle line. There was very little bleeding from the cut surfaces. The ovaries thus reduced in size were supported without strain by the broad ligaments, and their whole aspects were largely shielded from the general abdominal cavity by the natural approximation of the line of the infundibulo-pelvic ligaments and the posterior pelvic brim. Dr. Bailey remarked that in none of his cases had there been any clinical complications due to post-operative adhesions, nor any evidence subsequently of adherence of the ovary. No local symptoms had caused complaints, and the speaker regarded this operation as a very safe procedure. It had been his custom to precede laparotomy in these cases by a preliminary dilatation of the cervix and curetting, partly for its possible direct stimulating effect and partly to assess the length of the uterus, type of cervix, and presence or absence of endometrium. In conjunction with this treatment small doses of antuitrin S had been given in some cases, but there was no evidence that they had exerted any action. Clinical details were then given of the sixteen cases, in twelve of which regular menstruation had followed the operation. In the other four cases the onset of menstruation did not occur in one patient until three years later, and after the cessation of all treatment. Two had menstruated once only, and in the last case ten weeks had elapsed since the operation without menstruation starting. Dr. Bailey said that he had been impressed by the rapidity in most cases of the restoration of the normal rhythm of menstruation, suggesting that rhythmic ovulation had been simultaneously restored and that the immature follicles in the deeper ovarian tissues had been stimulated and were finding their way to the surface. He did not wish to compare the merits of operative hormone therapy, believing that the latter should be tried first in all cases when possible.

Mr. J. E. STACEY remarked that the late Mr. King had performed a similar operation on a number of cases of dysmenorrhoea in the presence of cystic ovaries. He thought that its main scope lay in this type of case

rather than in secondary amenorrhoea. Professor D. DOUGAL thought the operation very drastic if the patient was young and the amenorrhoea of only six months' duration. Periods of amenorrhoea of this length were by no means uncommon in young unmarried women. Mr. T. N. A. JEFFCOATE stated that there were three types of amenorrhoea: when the ovary was not functioning as an endocrine organ; when there was persistence of the oestrin phase; and when there was persistence of the lutein phase. A differential diagnosis could be achieved by the examination of curettings. The condition might be relieved by injections of the anterior pituitary hormone or by a mental shock, or perhaps by the shock of an operation. Dr. RACKER believed that a persistently low blood oestrin content was sometimes a factor in the production of this type of amenorrhoea.

ECLAMPSIA AND PRE-ECLAMPSIA

At a meeting of the Midland Obstetrical Society at Birmingham on December 3rd, 1935, a discussion was held on eclampsia and pre-eclamptic states.

Mr. S. W. MASLEN JONES said that since the Obstetrical Congress of 1922 there had been a general adoption of purely medical treatment in eclampsia as opposed to active obstetrical intervention. The essentials in treating eclampsia and pre-eclampsia were similar, namely: (1) rest; (2) starvation, water only being given for twenty-four to forty-eight hours, when there were added fruit juice, carbohydrates, and milk; (3) intestinal lavage and saline purgation; and (4) free intake of alkaline fluids. In eclampsia, nursing in the left lateral position was essential, because it allowed the escape of blood and mucus from the mouth and air passages; stomach and colon lavage should be performed as a routine, leaving magnesium sulphate in the stomach. In unconscious patients fluid should be given per rectum; if this was returned intravenous or even submammary salines might be necessary. In no case should the fluids be increased until the bowels were acting freely, since there was a danger of waterlogging the patient. The value of drugs was a matter of controversy; morphine in a dose up to 0.5 grain was useful for controlling restlessness during labour, but often failed to stop fits. It was not entirely safe in cases with pulmonary oedema. Induction of premature labour in eclampsia was not undertaken often enough. In the absence of marked improvement in the patient's condition or of signs of the spontaneous onset of labour, after twenty-four hours' medical treatment labour should be induced by aspiration of liquor amnii with the Drew Smythe catheter. In severe pregnancy toxaemia without fits the use of induction called for skilled judgement. Mr. Jones advised induction after the thirty-sixth week in severe cases which had responded to treatment to some extent; before this time medical treatment should be continued for a longer period unless the patient was getting worse, since the viability of the child was of importance. In the latter type of case it must be remembered also that intrauterine death of the child was frequent.

Mrs. BERTRAM LLOYD agreed that it was dangerous to give too much fluid in the early stages of treatment. She advised induction in a pre-eclamptic after three weeks' medical treatment had produced no improvement. In her experience eclampsia was rare in hospital cases. Labour in eclampsia was merely an incident. At the Birmingham Maternity Hospital there had been eighty-seven cases of eclampsia in the past six years. Delivery was spontaneous in fifty-six cases; forceps were used in nineteen; Caesarean section was performed once. In four cases labour was induced, and six died undelivered. The maternal death rate was 25 per cent. and the foetal 47 per cent.

Mr. ALFRED DANBY said that since the primary cause of the pre-eclamptic state was still unknown all forms of treatment for this disease, or perhaps syndrome, must be based upon pure empiricism and not upon scientific reasoning. Recent experimental work in America suggested that some of the untoward symptoms of eclampsia were due to "water intoxication," and he wondered whether this suggestion would have any influence on the fetish for forcing fluids to dilute the "toxins." The three cardinal signs of pre-eclampsia were raised blood pressure, oedema, and albuminuria. The last-named was probably the least important, and it was now known that water retention could occur without visible oedema. Any undue gain in weight in the last trimester of pregnancy was suggestive of this so-called "hidden oedema." The generally recognized fact that free diuresis was usually followed by rapid improvement in the general condition of the patient seemed to indicate a functional rather than an organic derangement of the kidneys. In this connexion he was particularly interested in the investigations of Hofmann and Anselmino (1931), who had been able to demonstrate experimentally that the blood of eclamptics contained two components of the posterior lobe hormone, an anti-diuretic element, and a pressor factor. These extracts were not present in the blood of normal women, pregnant or otherwise. Goodall (1933), commenting on this work, which had been performed with rabbits with controls, considered that it showed a monotonous uniformity of reaction, which placed the anti-diuretic content of the blood of these cases beyond doubt. The pressor substance was present only in cases of high systolic blood pressure, 180 or over. It would seem, however, that this investigation had not yet received confirmation by other workers. Whilst the physiology and pathology of water metabolism was still imperfectly understood, he thought that it had a quite considerable bearing on the subject under discussion. For several years he himself had treated a number of cases of pre-eclampsia showing oedema by fluid limitation and dehydration modified from the method of Arnold and Fay (1932). The results from this method of treatment were excellent so far as they went, but the cases were specially selected and the method was not carried out in its entirety. In many instances the change in the external appearance of the patient with the reduction in weight due to loss of fluids was very striking. Although the diet contained over 50 grams of protein, including meat, he had seen no ill-effects from its use, but the majority of the patients complained of thirst. He was convinced that in eclampsia the injections of hypertonic solutions had given improved results, probably owing to their dehydrating and diuretic effect. He usually employed a 25 per cent. solution of glucose intravenously, but occasionally intramuscular injections of 25 per cent. magnesium sulphate were utilized in addition. The free use of sedatives, including sodium luminal hypodermically, was part of the routine treatment, and all forms of intervention—such as colon washouts, rupture of the membranes, and forceps delivery—were performed under chloroform anaesthesia. The objection to the use of small quantities of chloroform was, in his opinion, more academic than real. Although admitting there might be an occasional case where the employment of Caesarean section was indicated, he personally had never had occasion to perform the operation for eclampsia.

Mr. H. L. SHEPHERD remarked that in Bristol eclampsia was becoming less frequent. During the past ten years he had seen eighty cases, with nine deaths, whereas before the war the average was fifteen cases a year. He believed that eclampsia and pre-eclampsia should be treated on different lines since, although the primary toxin was undoubtedly formed in the placenta, the fits were due to the absorption of toxic products from the bowel. Most of the deaths in eclampsia were due to intracranial haemorrhage, a direct result of the high blood pressure and the fits. Therefore the most important principle in the treatment of eclampsia was to reduce the blood pressure and control the fits. This, in his opinion, could best be done by free venesection and the exhibition of morphine. Subsequently the usual eliminative treatment of the bowel should be instituted; no protein should be given, with the idea of sparing the liver and giving it every chance to recover. He considered that it was dangerous to give too much fluid. He believed that pre-eclampsia was always associated with constipation, when the higher breakdown products of proteins were absorbed unchanged; this should be treated energetically. The value of the induction of labour lay mainly in the

relief of intra-abdominal pressure ; hence it was that the catheter method of withdrawing liquor amnii was better than the introduction of bougies. Calcium therapy, both by mouth and intravenously, was of value in all stages.

Mr. WENTWORTH TAYLOR said that the Dublin method of treatment did not consist of a fixed and unalterable regime. While the basic principles of Tweedy's treatment were still generally observed, each case was dealt with on its own merits. To some extent he had been impressed by the efficacy of the treatment, and in his personal experience of sixty-two cases he had only had nine deaths. In all the fatal cases post-mortem examination had revealed some gross failure of the human organism, such as cerebral haemorrhage or massive necrosis of the liver or kidneys, which could not be expected to be influenced by any form of treatment. Pregnancy toxaemia could be classified broadly into four separate types. In the order in which they appeared, these were:

1. *Pernicious Vomiting.*—This should be treated in the first place by securing a proper action of the bowel and by correcting any malposition of the uterus. Cases in which this preliminary attack failed lost weight rapidly, continued to vomit, and developed jaundice and acetonuria. In these cases delay was dangerous, and the uterus should be emptied by abdominal hysterotomy in the sure knowledge that rapid improvement would follow. Evacuation by insertion of tents was too slow.

2. *The Pre-eclamptic State.*—In this condition starvation need seldom be continued beyond two days, and never beyond four. If there was no improvement after this time, labour should be induced. Hysterotomy might be necessary in severe cases before the twenty-fifth week.

3. *Eclampsia.*—In this he advised an initial dose of 1/4 to 1/2 grain morphine. If this failed to control the fits a major cerebral lesion was probable, and no further morphine should be given. Venesection was not popular in Dublin, since eclamptic cases were definitely anaemic in the puerperium. Caesarean section at or near term was never necessary, since it was easy to stimulate the uterus to labour.

4. *Toxic Ante-partum Haemorrhage.*—Treatment by plugging the vagina was seldom used now for this. It was preferable to puncture the membranes, allowing the waters to escape and the uterine cavity to close down, after which spontaneous delivery was the rule.

Mr. T. C. CLARE was not convinced that toxaemia was the right descriptive term for the condition under discussion. He had been converted to Paramore's mechanical theory of the origin of eclampsia. The essential in treatment was to stop the fits. The results published by Stroganoff were so remarkable that he believed that the danger of using chloroform for this purpose was less than generally believed. He himself used spinal anaesthesia to lower the blood pressure, and regarded this as a safer measure than venesection. It could be repeated if necessary. He thought that oxygen played an important part in treatment of the fits.

Professor MILES PHILLIPS said that eclampsia was rare in treated cases. It was important that the honorary surgeon should see cases of pre-eclampsia at least three times in the twenty-four hours. At Sheffield they had used the Stroganoff method of treatment since 1922. Induction of labour should be instituted when a pre-eclamptic patient became worse, and it was important to listen to the foetal heart twice daily. He thought that veratrone and venesection were both of value, but that it was easy to overdo the administration of fluids. The fact that eclampsia was extremely rare in Holland was attributed to the salt-free diet. Professor DREW SMYTHE believed in giving large doses of morphine in eclampsia. He thought that a pre-eclamptic required protein to reduce the oedema. Dr. C. L. SOMERVILLE said that in the treatment of eclampsia he advised immediate venesection followed by an intravenous anaesthetic, preferably pernocton in a dose of from 3 to 4 c.cm. There was no risk of damage to the liver. The patient slept for five to seven hours, and was not restless on waking. Fits were rare after this. The effect of evipan was too transient for use in eclampsia. He believed in giving pilocarpine to produce sweating. Professor RAYNER advised rupture of the membranes as soon as possible in eclampsia. If pilocarpine was used there was danger of drowning the patient.

CORRESPONDENCE

The number of letters received for publication is so large that we must ask correspondents to make their points briefly and to regard 600 words as the upper limit of length.

Physical Education

SIR,—It seems to me that the voice of the orthopaedist should be heard in the land in view of the important matters relating to physical education which are discussed in your issue of January 18th.

The term "orthopaedic" means the training of children to be erect and free from the blemish of physical deformity, and a large number of deformities are essentially postural or static in type from faulty bodily mechanics. Surely the results of inadequate bodily development and faulty posture which present themselves daily to the orthopaedist make him as competent as anyone to assess the value of physical education to developing youth. Is it not the case that, viewed from the fundamental aspect of right and wrong use of the body in respect of posture, the vast majority of people habitually use the body in states of physiological dysfunction? In this sense they are deformed, therefore, and it is the province of the orthopaedist to understand and to advise as to the best method for correlating the structure and function of the body.

I submit that the circular of the Board of Education on Physical Education in recommending the appointment of organizers of physical training assumes that these are to be laymen and that they will be dealing with the normal. My contention is that they will not be dealing with the normal in the vast majority of cases either in regard to physique or posture, and that, therefore, their efforts may be wasted. Careful thought must lie behind their skill in dealing with physiological deformities.

The importance of correct posture has been drawn attention to in former memoranda dealing with physical education, but has it been effectively carried out in the past? Will it be accomplished by the recommendations now made or to be made? Are the many so-called "systems" anything but the empirical methods advocated by different individuals who happen to believe in them? I beg leave to doubt whether these "systems" and methods have been based upon sound physiological principles to train the living muscular system as a co-ordinated whole.

There are two types of muscular activity—the phasic and the tonic. The ordinary methods of physical education appeal to the phasic action of muscles. The tonic action of muscles—so vastly more important if posturally defective subjects are to be taught correct standing, sitting, walking, and breathing—requires a different training, dependent as it is upon a different nervous control. They are two different entities, and I submit that the tonic training must precede the phasic.

We are apt to put the cart before the horse in matters of physical education, and I wish to sound a note of warning lest the national schemes are founded upon methods which are to be physiologically and educationally unsound. Speaking for this area, I know that the organizers of physical training in the schools would welcome the advice and co-operation of the orthopaedist in framing the type of lesson to be given. We should do all that is possible to give the right guidance to forward the splendid efforts being made.—I am, etc.,

Edinburgh, Feb. 5th. W. A. COCHRANE, F.R.C.S.Ed.

Haematemesis and Melaena

SIR,—" The mortality from haematemesis is small, and occasionally a patient who appears to be *in extremis* will recover, but, on the other hand, an apparently moderately severe case now and then proves fatal." I was surprised to read this sentence in Dr. Charles Bolton's otherwise admirably clear account of the treatment of the above condition in the *Journal* of February 1st, and more especially as I had noted his previous statement that the vast majority of cases are due to peptic ulcer.

The mortality from haematemesis in peptic ulcer is *not* small ; it has been shown in many papers—including my own analysis of thirty-two years at the General Hospital, Birmingham—that it varies from 10 per cent. to 25 per cent. It is unnecessary to document the evidence, as this has been fully dealt with by Tidy, but the attitude of those interested in the problem is one of profound dissatisfaction with the results of treatment.

Dr. Bolton gives an account of modern treatment of haematemesis with which few would disagree ; it is similar to that adopted at most centres. Some would regard his use of morphine as unduly cautious (I agree with this caution) ; some would begin feeding by mouth at a much earlier period ; and some would wonder why the gastric juice was allowed to remain unneutralized. I would merely draw attention to the undisputed fact that if cases are treated on these lines the mortality will not be small as Dr. Bolton suggests, but will vary between 10 per cent. and 25 per cent., in the hospital cases at any rate.

In the treatment of haematemesis an attitude of complacency is not justified by the facts, and we may well ask what hope there is of lowering the death rate. It is doubtful whether surgical treatment as a routine measure would give better results, and, indeed, it is difficult to persuade most surgeons to tackle a patient during active bleeding—such has been my own experience. The only hope at present comes from the Danish work. Meulengracht has published a large series of cases with a death rate of less than 1 per cent., and his treatment has been quite opposed to all traditional teaching: he feeds his patients from the first fairly liberally, and gives them alkalis.

It seems to me that few therapeutic claims are so much in need of confirmation as Meulengracht's, and that an early decision could only be arrived at by a co-ordinated research by a group of the large hospitals. Such a research would not be difficult to organize, and the gravity of the problem would justify the effort.—I am, etc.,

Birmingham, Feb. 2nd. ERNEST BULMER.

At Dr. Bulmer's suggestion we have referred his letter to Dr. Bolton, who replies as follows :

SIR,—Dr. Ernest Bulmer has raised the question of the mortality of haematemesis in peptic ulcer. His own statistics of the General Hospital, Birmingham, show a percentage of 8.8 according to my calculation. Other statistics which show high figures are those of St. Thomas's Hospital, which are 24.1 per cent. ; of Lynch, 12.9 per cent. ; of Hinton, 20 per cent. It is definitely stated that all these statistics were obtained from the analysis of either severe profuse or gross cases of haematemesis, and therefore were selected cases. On the other hand, much more moderate figures are quoted by other observers. Paterson, combining four groups of statistics, found a percentage of 3.8 ; Crohn one of 4.2 ; Guy's Hospital one of 2.5. To get a true estimate of the mortality, cases of all types of severity should be included, and it is well known that the cases admitted to hospital are more severe than those treated in private practice. Just over thirty years ago Lenhartz introduced the method of immediate feeding—that is to say, the administration of food to patients who are bleeding. A good deal was said about this at the time, but it was soon given up completely so far as I remember. It is possible that the treatment of Meulengracht may suffer a similar fate. I think that the method of transfusion when fully developed will greatly improve the treatment of haematemesis, for it not only replaces blood which has been lost, but also tends to obviate the inefficient clotting of dilute blood.—I am, etc.,

London, W.1, Feb. 7th. CHARLES BOLTON.

Physical Medicine–Its Scope and Teaching

SIR,—The conception of physical medicine as a separate province, with its own scientific basis and technique in practice, is a new thing in the history of medicine, and at present, I think, little understood. To those who have devoted a lifetime to the study and application of physical remedies it is a very great conception, and we cannot but be glad that, however gradually, its essential importance and magnitude are becoming recognized. It is often difficult to translate ideas and facts into accurate words, and then to see what subjects, covering perhaps a wide range, are properly included under general names. There is at present not a little uncertainty as to what physical medicine really means. The word physical is sometimes applied to the body, and, for this reason apparently, some medical authorities appear to regard physical medicine as equivalent to systematic *education of the body*, exercises, and " physical jerks."

A large group of the profession on the Continent have concentrated their thoughts on the science and practice of the health resort, and they are now celebrating the fiftieth anniversary of the first International Congress on *Medical Hydrology and Climatology*, which was held at Biarritz in 1886. Again, for many years another international group has met and done good work in various countries as representatives of *thalassotherapy*. More recently groups of workers in research institutes in the mountains or on the seashore, in four or five countries, have been engaged, as your review columns show, in the new study of *bioclimatology*, which, of course, has a medical orientation.

Another and comparatively recent specialty has been served by societies and congresses under the name of physiotherapy—in England and America this name mainly connoting *radiology and electrology*. The prominence of this specialty is no doubt accounted for by the great progress made in late years in its investigation and technique in the hospital departments. The programme for the international congress which is about to be held in London continues a long series of meetings under the name of physiotherapy, going back for more than thirty years, and of which Belgium is deservedly the headquarters.

But now in England, for the first time, the greater name of physical medicine has been adopted. Some may ask, " What's in a name?" A name by itself may raise up or cast down, and certainly in medicine a general name should comprise not only an art but a science. The *practice* of physical medicine surely includes all the above special methods for the utilization of external energy, in its various forms, whether natural or reproduced. The corresponding *science* (shall we call it " medical physics "?) covers the wide field of the reactions of the body to external impressions, whether single or combined and successive, as in Nature itself.

Already one great step in the development of this new conception has been taken by accepting the fresh air as the main remedy at certain stages for tuberculosis and other diseases. Moreover, we have now, within the present century, a number of well-defined physical procedures in the treatment of nervous, cardiovascular, and

rheumatic diseases, which are substantiated by scientific investigation.

In view of such facts it would seem to me to be a great service to gather together under one comprehensive name all those isolated branches of a cognate science, and to institute teaching, with its ancillary research, which shall have for its object the elucidation of those reactions, in the successive phases of chronic disease. That, at all events, might give us a compact body of science, however separate in practice the different branches of physical medicine may be. Those who engage in these several branches would thus have the opportunity of grounding themselves in the basal science as well as in the special technique of their own departments, whether it be hydrology and climatology (with marine treatment),* or radiology and electrology, or "physical training," for it is questionable whether any practitioner could cover all the ground. The good results that have followed the institution of teaching and a diploma in radiology should be an encouragement in following the same course in the other main departments of physical medicine. Otherwise it is difficult to see how the standard of practice can be maintained and qualified men provided for the future.—I am, etc.,

London, W.1, Feb. 6th. R. FORTESCUE FOX.

Prostatectomy

SIR,—I feel sure that surgery will have good cause to be grateful to Mr. Clifford Morson for his sponsoring of the Harris operation of prostatectomy with immediate closure of the bladder. There can be no doubt that the strong backing of a man of his experience and understanding will result, as indeed it has already begun to result, in a wider adoption of this excellent operation. It is surprising that this country should have been so slow in recognizing the merits of the Harris operation, which now shows signs of becoming the procedure of choice in expert hands, and it is for this reason that I feel bound to "stake a claim" prior to that of Mr. Morson, who in his opening address at Melbourne stated that he believed himself to be Harris's "first disciple in England." Harris's article was published in the *British Journal of Urology* in 1929, and in 1932 I published in the *Lancet* a small series of cases in which I had employed his methods. No one can be conversant with all the literature all the time, and in claiming to be an earlier, if more humble, disciple of Harris than Mr. Clifford Morson I should not care to call myself the first in terms any less tentative than those which Mr. Morson himself employs.

In Mr. Morson's address published in the *British Medical Journal* of February 1st he is at pains to define his subject as "prostatectomy." He explains that it is not his business to discuss methods of treatment of prostatic obstruction other than by removal of the gland, but there is, none the less, implicit in certain sentences in his paper a condemnation of perurethral methods, and I feel that, having ventured into print upon this subject, I must put on record a strong objection to this condemnation. The small fibrous prostate can be treated through the urethra quickly, safely, and certainly. Thirty to fifty per cent. of patients suffering from prostatic obstruction are found to have glands of this type, and after a considerable experience of their treatment by both open and closed methods, I have no hesitation in saying that it is unnecessary and undesirable to subject them to an open operation. If over-enthusiasm for a new method has brought it into disrepute through its application in unsuitable cases, this should not deter a mature and just judge from recognizing and approving its excellence in appropriate circumstances.—I am, etc.,

Liverpool, Feb. 3rd. CHARLES WELLS.

SIR,—Mr. C. D. Maitland's interesting article in the *Journal* of February 1st (p. 203) on prostatic resection by the suprapubic route, being a departure from the now generally accepted method, seems to call for comment upon certain points. It is, I think, generally agreed that transurethral resection calls for a high degree of skill, the fundamental principle being the ability to chart accurately the anatomy of both prostatic urethra and bladder neck with the urethroscope and cystoscope, the ultimate aim being the production of a shelving floor from the trigone to the verumontanum, removing, in addition, as much of the lateral lobes as may be necessary to provide a V-shaped outlet. Bearing in mind these technical difficulties, whilst one must appreciate Mr. Maitland's statement that his operation of "retrograde resection" might be of interest to surgeons who had not acquired the necessary skill in cystoscopy, I cannot help feeling that the method so clearly described by him, although apparently simple, entails certain risks, the chief being:

1. Should contact be made by the electrode with the metal speculum, the point of which enters the membranous urethra, irreparable damage might be done to the latter structure.
2. For the same reason the external sphincter might suffer, resulting in incontinence.
3. The difficulty in regulating the depth of coagulation following the final curettage, and the subsequent separation of sloughs, with the possibility of severe haemorrhage and sepsis.

For those who wish to undertake this method of approach the operation described would, in my view, be made simpler and safer if the final stages were carried out with a Canny Ryall or McCarthy resectoscope, as I have myself done in four cases in which for mechanical reasons the instrument could not be passed in the usual way. For this method the following advantages may be claimed:

1. The risk of damage to the membranous urethra and external sphincter is eliminated, provided that the resectoscope is not passed down the urethra for a distance greater than one to one and a quarter inches.
2. The risk of secondary haemorrhage and sepsis is reduced to a minimum, the tissues being cleanly cut with the wire loop, with superficial coagulation only.
3. The insulated bakelite sheath prevents the anterior and antero-lateral aspects of the urethra from being cooked unnecessarily.
4. The lamp, which moves with the cutting loop throughout its entire excursion, provides reasonably good visualization.

—I am, etc.,

Middlesbrough, Feb. 3rd. B. G. S. BELAS.

Nutritional Needs

SIR,—The committee of experts appointed, at the instigation of the Health Organization of the League of Nations, to define the nutritional needs of the human being from conception to adult life, has issued its report. It is a highly important document, representing as it does "the considered opinion of experts in the field of nutrition from Great Britain, the United States of America, France, Sweden, Norway, and Russia." It is pointed out in that report that modern diets are deficient in foods rich in minerals and vitamins—that is, in "pro-

* The amount of available material may be judged from the fact that more than one hundred papers are contained in the *Annals of the Institute of Hydrology and Climatology* in Paris for 1935; and a much larger number are abstracted every year in the *Archives of Medical Hydrology*.—R. F. F.

tective " foods, which include milk and its products, eggs and glandular tissues, green leaf vegetables, fruit, fat fish, and meat (muscle).

Within recent years stress has been laid upon the necessity of a liberal supply of milk, not only for the school child, but throughout the entire growing period—nay, even beyond. How are we to reconcile this teaching with the fact that man attained his full stature of *Homo sapiens* without any milk other than his mother's, and that extant pre-agriculturists, enjoying good health, are similarly limited? In order to explain the anomaly we need to take account of man's remote dietetic past. The most dramatic and eventful change in man's ancestral diet occurred when his anthropoid ancestor, essentially a vegetable feeder, took to the hunt; for it was undoubtedly this adventurous move which led to his evolution humanwards. Here was a being mentally gifted beyond all others (save, perhaps, for certain near relatives), and possessing hands, but wholly lacking the equipment, anatomical and instinctive, of the carnivore. This being so, for success in the hunt he was obliged to depend upon his mother wit. Hence it came about that super-average intelligence, aided by the possession of prehensile hands, acquired a survival value such as had never before been displayed in the history of the world. As a result the evolving man, with increasing intelligence and increasing skill in the hunt, became increasingly carnivorous, until, about the time he had achieved the status of *Homo sapiens*, he learned to cook his food. This led to a slight increase in the proportion of his vegetable food; nevertheless he remained largely carnivorous right up to the introduction of agriculture, about 5500 B.C. Such having been man's dietetic career for half a million years or more, his system has become organized for digesting, assimilating, and metabolizing animal food: he is in fact a mixed feeder, and he cannot thrive on vegetable food alone, no matter how greatly its nutrient value has been increased by cultivation, or how much concentrated by the addition of extracted vegetable proteins, fats, sugars, or vitamins. In short, for complete health man needs a certain proportion of animal food, and it is noteworthy in this connexion that animal proteins and fats possess a higher nutrient value for him than the vegetable forms.

Now the effect of agriculture after it had become fully established was greatly to reduce the average supply per individual of animal food, and to increase that of vegetable food, especially cereal food. Mammals and birds were not bred for their flesh, nor for their milk and eggs, until long after the introduction of agriculture; and never since the artificial rearing of animals for food began has the provision of animal food been able to keep pace with the increasing population. Taking the population of the world as a whole, the proportion of animal to vegetable food is much less than it was in pre-agricultural times; not only so, but large sections of the population of countries like India and China and the poorer portion of the population of European countries are to-day suffering from a dearth of animal food, more particularly of meat, the most highly prized of staple animal foods throughout the world.

It is just here that the value of cow's milk and hen's eggs is displayed. These highly nutritious animal foods are substitutes for the flesh food man secured as a hunter. It is not surprising that agricultural man should come to realize their value. Here were highly nutritious foods which Nature had devised for the young of certain warm-blooded vertebrates. Accordingly he set to work to increase the milk yield of a particular species of mammal and the egg-laying capacity of a particular species of bird, and to such good effect that he has succeeded in breeding a cow which is able to secrete its own weight of milk every successive fortnight for several months together, and a variety of fowl capable of annually laying eggs to the number of 300 or more. In thus augmenting, side-tracking as it were, a natural function of mammal and bird to serve his own nutritive needs, man has introduced an entirely new form of animal-food culture, and one which is likely to play a yet more conspicuous part in his future. The unique interest and supreme importance of milk and egg production lie in the fact that, being of the nature of animal foods, they can take the place of flesh foods.

I have left no room to do more than mention a further aspect of the milk question—namely, whether, if other forms of animal food (for example, meat, bird, fish) are available in plenty, milk is absolutely essential for children even of a tender age. Why should it be? On the other hand, the provision of a daily glass of milk for the children of the poor who need more animal food is a wise and beneficent measure.—I am, etc.,

London, W.1, Feb. 8th. HARRY CAMPBELL.

Delayed Rash in Measles

SIR,—In reference to Dr. Selby's reports of two cases in which the appearance of the rash of measles was delayed in one case to the eleventh and in the other to the ninth day of the disease (*British Medical Journal*, February 8th), may I be allowed to say that it is not so very unusual for the rash to appear later than the seventh day. I have notes of several such cases; in two of them the rash came out on the twelfth day. I have referred to these cases in *A Textbook of Infectious Diseases* (p. 420).

It may interest Dr. Selby and others to know that the delayed appearance of the rash in measles was known to Rhazes (ninth to tenth century A.D.; see *A Treatise on the Small-pox and Measles*, translation by W. A. Greenhill, p. 119), and to Guillaume de Baillou (Ballonius, 1538 to 1616; see *Epid. et Ephemerid.*, Lib. I, in vol. i, *Opera Omnia*, p. 37).—I am, etc.,

Hampstead, N.W.6, Feb. 8th. E. W. GOODALL.

Removal of Tonsils by High-frequency Currents

SIR,—My experience of removal of tonsils by diathermy is very similar to that of Mr. G. de Rynck (February 8th, p. 283). It is quite unsuitable for tonsillectomy by a *single operation*. By blunt dissection a layer of mucous membrane can be raised from the edge of the tonsil. This folds round the edge of the pillars of the fauces after the tonsil is removed, leaving a rounded edge to the pillars. This makes all the difference in producing a good anatomical result, in preventing scarring, and in the subsequent comfort of the patient. This desirable result cannot be achieved by diathermy.

On the other hand, for the removal of tonsil remains *progressive destruction* by diathermy is a most useful procedure. A few patients have a fear of a major operation such as tonsillectomy in the adult. For such cases progressive removal by diathermy is a useful substitute. It takes about five applications to remove an average tonsil. When a local anaesthetic is used infiltration with novocain or some similar drug is necessary, in order to make the operation painless. Spraying the throat with cocaine or swabbing is never satisfactory in my experience. For malignant growths of the tonsil diathermy removal is invaluable. Also where a risk of haemorrhage is feared, in bad anaesthetic risks, and advanced thyroid cases, etc., removal by diathermy is to be preferred. Here the spreading of the operation over two or three months, with its inevitable sore throats, is the lesser evil. For the ordinary patient a properly performed dissection operation is definitely to be preferred.—I am, etc.,

Guildford, Feb. 10th. T. B. JOBSON.

Causes of Iridocyclitis

SIR,—Mr. Doggart's excellent paper in this week's issue of the *Journal* (February 8th, p. 249) is of interest to me, as twenty years ago I reported cases of iridocyclitis due to dental infection. Mr. Lang was writing at the same time. I was then at the Royal Dental Hospital as anaesthetist, and saw a lot of these cases sent over from the Royal Westminster Ophthalmic Hospital. Nowadays, with dental benefits paid by approved societies, the people look after their teeth better, and one does not see so many cases due to this cause. One source of infection—the appendix—has not been mentioned. One patient came to me weekly for treatment for three months, and at the height of his attack had some thirty to forty dots on the back of each cornea. One week he did not come, and his wife informed me that he had gone to hospital for an appendicectomy. When he returned as a patient the iridocyclitis was nearly better and the eye soon became normal. Till then I really thought the condition was tuberculous, as he was a tall, thin, and very pale young man ; but clinically we could find no trace of tuberculosis. —I am, etc.,

London, W., Feb. 8th. SYDNEY TIBBLES.

Presence of Copper in Gall-stones

SIR,—The memorandum by Mr. W. E. Newell in your issue of February 8th (p. 262) draws attention to a subject which has aroused considerable interest in Continental medical circles in recent years.

Hammarsten (1908) appears to have been the first to mention copper as a constituent of human gall-stones. Meunier and Saint-Laurens (1926) noted its presence in large quantities in pure pigment stones. In 1927 I published chemical analyses of a series of different types of gall-stone (*Zeit. f. Physiol. Chem.*, vol. clxvii), and showed that, while traces of copper may be found in other varieties of gall-stone, the so-called " pure pigment stones " are characterized by the presence of large quantities of this metal in addition to iron, calcium, and traces of other metals ; in fact, " the main constituent of these stones is bilirubin combined with metals." The copper content of these stones may exceed 1 per cent., and is sufficient to render the incinerated " ash " black (owing to the presence of cupric oxide) ; the other varieties of stone yield a white, or at most faintly coloured, " ash " on incineration. The subject was further discussed and the findings were confirmed by Herxheimer and Harpuder at the 1927 Vienna meeting of the Gesellschaft für Verdauungs- und Stoffwechselkrankheiten. More recently Schönheimer (1931) has shown that copper can be demonstrated with constancy in the " ash " of the more common faceted " cholesterol-calcium-bilirubin " stones, though in minute traces only.

In this connexion it is interesting to note the frequent association between pure pigment stones and diseases in which the copper content of the liver is raised, notably haemachromatosis and multilobular cirrhosis.—I am, etc.,

Glasgow, Feb. 9th. ALBERT A. FITZGERALD PEEL.

Oral Vaccines

SIR,—The communication by David Thomson and others in the *British Medical Journal* of February 8th reintroduces the subject of the possibility of immunization by means of vaccines administered by the oral route. Their paper is of value in giving data that oral administration of vaccines does produce active antibody formation in the serum, which bears out the clinical experiences that satisfactory results frequently follow this form of therapeutics.

During the last ten years I have been employing the oral method of vaccine treatment in suitable cases, and referred to this method of treatment in a paper on vaccine therapy published in the *British Medical Journal* of June 25th, 1932, and have definite evidence of satisfactory results in a large number of cases so treated. In general practice it is particularly indicated in the treatment of young children and elderly people, and in many for whom the hypodermic needle is looked upon with such horror that the ordinary method of vaccine administration is precluded.

In my experience the oral vaccines have been mostly employed for cases of catarrhal infections, rheumatic conditions, and catarrhal enterocolitis. The method I have employed has been to put up the graduated series of doses in small sterilized and corked phials with directions that the contents of these are poured into a tumbler to which one ounce of ordinary water is added, and the whole taken as a drink on an empty stomach. In some cases reactions have followed such administrations, and subsequent doses have had to be suitably rearranged. Clinical response has also been quite definitely marked in numerous cases.

I hope that the present reintroduction of this method of vaccine administration may encourage others to adopt this form of treatment, which has much to recommend it.—I am, etc.,

Liverpool, Feb. 10th. E. CRONIN LOWE.

Mental Health and the Law

SIR,—I refer to a report of the recent Conference on Mental Health which appears in your issue of February 1st, and would like to ask that you will alter just one word in the otherwise excellent report of my opening to the discussion on the first morning's papers. I am alleged to have said that I had always felt that " in the sphere of public health the law was too much with us." What I did say was " in the sphere of *mental* health the law was too much with us." I think this difference is important, because I hold the opinion that whereas in the sphere of public health the law has evolved with the growth of preventive medicine (notably in the new draft Public Health Bill to which I referred at the close of my remarks), in the sphere of mental health the law is a source of obstruction to the rational development and correlation of mental health services.—I am, etc.,

Public Health Department, Cardiff, Feb. 7th. J. GREENWOOD WILSON.

The Poisons Rules

SIR,—The misconception regarding the application of the Rules just issued by the Secretary of State with regard to the qualifications required of " persons in control of the manufacture of pharmaceutical preparations containing poisons " arises, as I have suggested, from the absence, both in the original Act and in the Rules, of any definition of the terms " manufacture " and " preparations," and the meaning to be given to these terms has consequently, as I submit, been interpreted quite differently by Mr. Geoffrey Lloyd and by the Home Secretary. In Rule 29 " pharmaceutical preparations," the subject of the Rule, are all actually described as " manufactured " preparations, and no distinction is made between those preparations which have undergone a process of manufacture, and therefore are correctly classified as " manufactured," and those which cannot be so described, having merely been compounded.

In the absence of any differentiation between the terms " manufacture " and " preparation " the intention and effect of the Rule would seem to be that *all* pharma-

ceutical products containing poisons made for the purpose of internal treatment of human ailments can only be produced under the control or supervision of persons possessing one or other of the prescribed qualifications; moreover, whereas in Rule 27 of the issue of July, 1935, registered medical practitioners were recognized as possessing such qualification on an equality with members of the Pharmaceutical Society, Rule 29 of the new edition expressly limits the activity of registered medical practitioners to the preparation or manufacture of a certain restricted group of glandular products. The purpose of that change remains obscure, but the very fact that it has been deliberately introduced in the Rule surely suggests that medical practitioners *are* concerned with its application.

But whatever may be the position as regards dispensing, it is clear, at any rate, that the list of "persons authorized to be in control of premises in which pharmaceutical preparations containing any poison are manufactured for the purpose of the internal treatment of human ailments" does not include (*a*) registered medical practitioners as such, or (*b*) British university graduates who may have taken science degrees with honours in chemistry. This latter exclusion will unquestionably be fought in Parliament by representatives of the universities, and a meeting of such representatives has been summoned to discuss this very matter during the coming week. It is, of course, for the medical bodies who have as the purpose of their existence the protection of the interests of their members to decide whether or not they wish to make similar protests.

Mr. Geoffrey Lloyd's argument, that medical practitioners cannot be concerned because "those who were watching, whether inside or outside Parliament, the interests of the medical profession would not have acquiesced in the passage of Section 23 (1) (*i*) if there had been any reason to suppose that it affected in any way the right of the medical practitioner to dispense his own medicine," seems to me to be refreshingly ingenuous but hardly convincing. Equally innocent is Mr. Linstead's faith that Acts of Parliament cannot employ words incongruously.

To put this matter, however, to the test, I have asked a question of the Home Secretary, which appears on the Parliamentary Order Paper for February 5th, in the following terms:

> "To ask the Secretary of State for the Home Department whether he will, in view of the variety of interpretations given to it, state what is the precise meaning to be attached to the word 'manufacture' as used in Rule 29 of the Poisons Board Rules issued in December; and whether that word covers the processes of compounding and dispensing medicines containing poisons used for the internal treatment of human ailments."

The answer will, we may hope, contain an authoritative definition, not as yet vouchsafed, of the meaning to be attached to the word "manufacture," as used in the Act and in the Rules now proposed by the Home Secretary.—I am, etc.,

House of Commons, Feb. 7th. E. GRAHAM-LITTLE.

Fire-walking

SIR,—Since my foregoing communication to you a week ago Professor Waterston, my co-observer at the Fijian fire-walking, has reiterated his original opinion, which, of course, merits respectful consideration. It will be noted that our joint clinical observations were unanimous in every detail, whereas our suggested explanations are divergent. Each of us having failed, by the most persuasive arguments, to convince the other of the error of his views, we decided on the unusual course of publishing conjointly our unanimous observations and our conflicting opinions, together with some of the reasons on which these opinions were based. Perhaps our opposing conclusions may be partly accounted for by the fact that one of us is a distinguished anatomist and the other a practising clinician.

In his letter to you on January 21st, whilst he continues to discard the hypothesis of auto-suggestion in an emotional atmosphere of faith or religious ecstasy, Professor Waterston falls short of his usual standard of accuracy in discussing the well-authenticated phenomena of fire-walking by Kuda Bux when he says that "the statements by witnesses which have been published are directly opposed to it"—that is, to the presence of a religious atmosphere.

In the official *Bulletin* of the University of London Council for Psychical Investigation not only is it specifically stated (page 7) that Kuda Bux, immediately before attempting his first fire-walk, "stood in the end of a trench on a wooden platform, which had been placed there for the purpose, and, with left hand upraised, muttered a prayer from the Koran," but a photograph (Plate VI) is also included, showing him actually in this devotional attitude. Moreover, we read (page 11) how at a subsequent séance, after successfully accomplishing the fire-walking twice, Kuda Bux became unnerved, and found himself unable to risk another attempt. "Something inside me has broken," he said; "I have lost my faith, and if I do it again I shall burn myself."

The reality of these fire tests is so well authenticated that we cannot dismiss them as mere parlour tricks, like the snatching of a glowing cinder from a fire. The feat of extinguishing a flame of a lighted wax match between the moistened tongue and the roof of the mouth (being careful to knock off the glowing match-head beforehand) can be performed by any of us, whilst fire-eating performances with burning tow, seen at travelling circuses, etc., are also mere flame-quenching. Nor can we attribute the phenomena to habituation of the skin to frequent thermic stimuli of severe intensity. In fire-walking, over red-hot stones or burning embers, the whole weight of the performer's body presses the skin of the sole on to the red-hot surface, without inducing pain, erythema, blistering, or other tissue reactions. This is in dramatic contrast with the effects upon the skin of the two courageous English observers who acted as controls and who suffered both pain and cutaneous blistering.—I am, etc.,

London, S.W.1, Feb. 3rd. J. PURVES-STEWART.

SIR,—I entirely agree with Sir James Purves-Stewart that prolonged fire-walking is due to auto-suggestion, and it rather surprises me that no one has quoted the case in which the late Mrs. Champion de Crespigny handled a burning log.

This lady was president of the British College of Psychic Science. She was invited to attend a séance with a fire-medium—Mrs. Annie Hunter—who was said to handle fire and live coals with her bare hands. Ten or twelve persons met in a house in St. John's Wood in broad daylight. A reporter of a daily paper brought up a log from the cellar and placed it on the fire, and it soon became red-hot. Mrs. Hunter went into a trance, and then picked up the glowing log and walked round the circle. She brought it so close to the reporter that his hair was heard to sizzle. She offered it to Mrs. de Crespigny, who put out her bare hand. The log was left upon it while the medium walked round the circle, and when the log was removed Mrs. de Crespigny's hand was unmarked.

An account appeared in the *Daily Express* next morning. Two eye-witnesses were Lieut.-Colonel Johnson, I.M.S., and Mr. James Coates, Ph.D. Mrs. de Crespigny's own account will be found in her book, *This World and Beyond*.

Mrs. de Crespigny was a personal friend of mine. She was a scientist, and we had discussed those minor cases in which quick contact is often harmless, but this incident was quite different. I asked her how she could do such a thing, and she said she just felt she could. That was the explanation—auto-suggestion. Having served much in India, I often heard of this fire-walking—and of many tortures—and always held the same view, that auto-suggestion and ecstatic mental conditions at times entirely overrule our general scientific laws. In my own home I often pick up a tiny burning bit from my cigarette and get it into safety. But whether this is due to a scientific light touch or mental terror of "She-who-must-be-obeyed" is still an open question. Presumably in the case I have quoted Mrs. Hunter's hands were also found unmarked.

I am led to add a word on spiritualism, of which I have known a good deal. I am not a spiritualist, and I do not think spiritualists are dealing with the spirits of the dead; but, on the other hand, I am satisfied that many very curious manifestations are quite genuine, and include factors that would well repay both medical and purely scientific research.—I am, etc.,

T. M. CORKER,
Major-General.

London, W.8, Feb. 9th.

Birth Control

SIR,—Dr. A. J. Brock, in your current issue (p. 286), emphasizes a point of great importance—namely, "that birth control is a full-fronted attack on life." There are at last signs that this is becoming more recognized; soon I hope the full significance of the breach of a fundamental law of physiology and the dire consequences that ensue on it will be realized. Medicine is concerned mainly or wholly in safeguarding physiological laws, and its duty is to restore them to harmony when disturbed by pathological conditions. It is therefore strange indeed that medical propagandists of birth control should base their system on such a rotten foundation. Dr. Brock's plan appears impracticable, and in any case, before it can be set afoot the "super-bomb" will have destroyed the "super-city" and all will be over. Until our present pagan and materialistic outlook is changed there is no remedy, and "birth control has come to stay" to sap our national life.—I am, etc.,

W. THOMAS.

Prestatyn, Feb. 9th.

SIR,—While agreeing with much that Dr. G. H. Alabaster says in his letter published on January 18th (p. 135), I must differ from him on his statement that the strength of a population is not a vital matter for municipal authorities and "birth extinction enthusiasts," if, as I take it, "birth extinction" is a misnomer for "birth control." It is just *because* they rate so highly the strength of a population that some 180 maternity and child welfare authorities in this country are taking some steps under the Ministry of Health memoranda relating to the provision of birth control advice. Is Dr. Alabaster aware that out of the 3,805 maternal deaths analysed by the Departmental Committee of the Ministry of Health, 514 were due to lung disease, tuberculosis, kidney disease, and heart disease, and 470 to abortion? And it is for the same reason that most rational people to-day are anxious that medical advice on birth control shall be available to all parents who are determined only to produce children for whom they can provide food, clothing, and an adequate chance of healthy citizenship.—I am, etc.,

M. PYKE,
Secretary, National Birth Control Association.

London, S.W.1, Feb. 10th.

Obituary

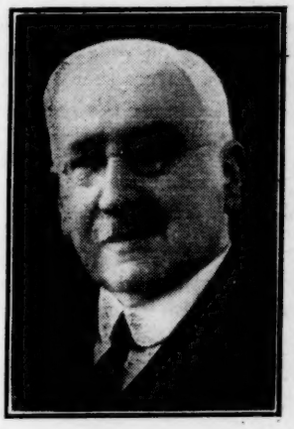
SIR CHARLES BALLANCE, K.C.M.G., C.B.

M.S., F.R.C.S.

Consulting Surgeon to St. Thomas's Hospital, and to the National Hospital, Queen Square

We regret to announce the death on February 8th, at his home in St. John's Wood Court, N.W., of Sir Charles Ballance, the distinguished surgeon who made many important contributions to surgical research.

Charles Alfred Ballance was born in a northern suburb of London in August, 1856, and, after being educated privately, entered the medical school of St. Thomas's Hospital as a member of London University in 1875. He took his degrees in the University, and gained the gold medal in both the B.S. and M.S. examinations. He then proceeded to the Fellowship of the Royal College of Surgeons of England, and, having gone through the usual clinical appointments at St. Thomas's, he devoted the intervening period before the next surgical vacancy on the staff to research work, partly in this country and partly abroad. In that age this was perhaps a rash thing to do, for hospital memories tend to be short, and there was no lack of active competitors. As a matter of fact competition was so keen that peace was only preserved by the creation of an additional vacancy, which was awarded to Ballance. Very soon afterwards, in addition to his general surgical work, he took charge of the aural department, in which his original mind soon made itself felt. He was one of the first, if not the very first, in this country to perform the complete mastoid operation with ligature of the jugular vein and drainage of the lateral sinus. Somewhat later the practice of grafting, which has added so much to the success of this operation, was introduced as a result of a fruitful suggestion made by Ballance.



No doubt this distinguished work in connexion with the ear department had something to do with Ballance's appointment to the staff of the National Hospital for the Paralysed and Epileptic, Queen Square, where he worked with Sir Victor Horsley as colleague. In this post he attained still wider recognition in the realm of neurological surgery, as involving both the cranium and the vertebral column. But with all this extensive output of energy in clinical work Ballance never allowed his passion for research to flag, and it was characteristic of him that whatever form it took it nearly always had a distinct bearing on surgical practice. The earliest example of this was his extensive work upon the ligature of arteries and the light it threw upon the treatment of aneurysm. His other favourite subject was the grafting of nerves, with its possibilities particularly in the treatment of facial paralysis, while his study of the anatomical relationships of the temporal bone was dictated by his lifelong familiarity with the complications of middle-ear disease.

As if he was not already busy enough, in 1912 Ballance accepted the appointment of chief surgeon to the Metropolitan Police, which he held until 1926. During the war he served in the Near East as consulting surgeon with the rank of Colonel. Later on he received the K.C.M.G., and became a Knight of Grace of the Order of St. John

of Jerusalem. The Universities of Glasgow and Malta conferred honorary degrees upon him, and he was honoured in many other ways.

At the Royal College of Surgeons of England Ballance held all the offices in succession, from Vice-President downwards. He delivered the Bradshaw and Vicary Lectures, and as late as 1933 the theatre at the College of Surgeons was thronged by old friends and colleagues who came to hear him give the Lister Memorial Lecture. This was one of his latest appearances in public, and since then his health had been sadly failing.

And now, let us leave the scientist to say a few words about Ballance the man. He was of a fine presence, with deliberate movements and measured speech. This quality of deliberateness followed him even in his professional work, for with all his skill he is described as a slow operator. In his early days this used to be explained as a protest against the useless speed of which the older school of surgeons were inclined to boast, but the more likely explanation is that it was just part of the man. He was a little alarming until one got past the first contact, and his natural dignity made one think sometimes of Aristotle's "magnificent man"; but this first impression quickly melted, and the full warmth of his kindly nature soon shone through.

In domestic life Ballance appeared at his best, exercising a genial hospitality around the family board. He was most happily married to a lady of great social charm and an admirable hostess. After her death ten years ago Ballance did not seem the same man, and there is no doubt that he never fully recovered from the shock of her loss. But still another blow, the shock of which in his loneliness he was even less able to withstand, was to befall him some years later in the death of his only son. Alaric was idolized by his parents, and after his wife's death Sir Charles made his home with him at Hatfield, where he was engaged in general practice. Alaric was a son of whom any father might be proud. His attractive personality and exceptional ability ensured him the success which he obtained as well as the affection of the countryside. In the midst of this he was carried off with appalling suddenness by some acute infection. Thus for the second time Ballance was faced with the break-up of his home; for this it was, in spite of the loving care he received from his daughters. And this may be written down as the end.

H. G. T.

Sir Charles Ballance joined the British Medical Association in 1883. At the Annual Meeting in London in 1895 he was vice-president of the Section of Otology, and at the Belfast meeting in 1909 vice-president of the Section of Surgery. Among many contributions to the *British Medical Journal* we may recall his presidential address at the inaugural meeting of the Society of British Neurological Surgeons, which appeared in our issue of January 8th, 1927, under the heading "Remarks and Reminiscences"; and the full report on experimental investigations by Mr. Lionel Colledge and himself on the surgical treatment of paralysis of the vocal cord, and of paralysis of the diaphragm, published three months later. At the dinner held on November 27th, 1934, in commemoration of the first operation for brain tumour performed by Sir Rickman Godlee fifty years earlier, Sir Charles Ballance related some interesting personal experiences of surgery at that period.

For the following appreciation we are indebted to Sir CUTHBERT WALLACE, President of the Royal College of Surgeons of England:

Ballance's chief characteristic was his passion for research, which started early in his career and continued long after his active work as a surgeon ended: he even journeyed to America when a favourable opportunity was given him to work in a laboratory there. Quite close to the end he was working in the newly opened research laboratories at the Royal College of Surgeons. His investigations covered much ground. His early work was on ligation of arteries, on which he published a sumptuous tome. Cranial surgery interested him very much, and a great deal of his later work was on the injuries of nerves and their cure by grafting or anastomosis. He had a very extensive acquaintance with the leaders in surgery both in this country and over the seas. As an operator he was slow, gentle, and painstaking, but inclined perhaps to lose sight of the time factor in its relation to the patient. As a teacher he did not appeal to the ordinary students, being as a rule a good bit above their heads. To the senior students and younger members of the staff he was a stimulus, and never lost an opportunity of helping them and assisting in any investigation. There was something very taking about him personally. He was a loyal man, both to his profession and to his country. He was full of ideas that were not always attainable. Many must remember his family life and his geniality as a host.

Mr. GEOFFREY JEFFERSON writes:

A brief eulogium ought to be put on record stating the debt that the younger neuro-surgeons of this country owe to Sir Charles Ballance. They are themselves for the most part fully aware of this, but statement of the fact will be a small act of thanks for great services. Ballance formed an important link with our neuro-surgical past. He was a Victorian who held the men of that time in the greatest veneration, and was proud that he had worked and moved among them. If he felt that there was no one to-day whose achievements or intellectual qualities could compare with those of times past, we were able to forgive him this errant viewpoint because of the urbane candour of its expression and his personal kindness to us all. He retained his interest in surgery remarkably, and as the years passed over his head they seemed to cast few shadows.

His continued activity in experimental research will be a matter of universal remark. However, it is not this that I wish to chronicle, for it is in itself remarkable enough. Ballance was the first president of the Society of British Neurological Surgeons. It was he who invited us to the remarkable dinner at the Athenaeum on the occasion of the foundation of the society, when he induced Sir David Ferrier to come out of his retirement to allow a younger generation to hear him speak. With him were Sir E. Sharpey-Schafer, Sir Grafton Elliot Smith, and Sir Arthur Keith. Had it not been for Ballance the society might have had more difficulty than it had in getting itself born. He was its first president, and characteristically refused to hold office for more than one year, insisting on relinquishing office for Wilfred Trotter to carry on. The society replied by making him honorary president. He was a regular attendant at meetings, and at the age of 77 he journeyed to Edinburgh and Aberdeen to show his films of experimental nerve anastomosis; and later to Manchester. Ballance belonged to an age in neuro-surgery which is past, and his chief value in discussion was his reminiscence of famous happenings of bygone days. Nevertheless, his comments on current trends and events were always most trenchant, and though he admired the past his wits were definitely in the present. He endeared himself to us all by his friendliness, his encouragement, and the genial banter of his conversation. He was extremely friendly towards his confreres of the United States, and showed a remarkable elasticity of mind in accommodating himself to their ideals in neuro-surgery. He valued greatly the friendship of W. W. Keen, Harvey Cushing, and Charles Frazier, to

name but a few. His work with his friend, Arthur Duel of New York, is well known. He instantly recognized the importance of John Beattie's work, which, though British, flowered first over-seas. This readiness to recognize greatness in others of non-British nationality, his own innate tendency to hero-worship, exerted a most important influence with the younger men here. We have known him only in old age, but if we could all live to own his years and to turn them to such good purpose we should enrich our time.

[The photograph reproduced is by Bassano, Ltd.]

WILLIAM HENRY BATTLE, F.R.C.S.

Consulting Surgeon, St. Thomas's Hospital

As briefly announced in our last issue, Mr. William Henry Battle, consulting surgeon to St. Thomas's Hospital, died on February 2nd at his home on Horsell Common, Woking, in his eighty-first year. Throughout the early years of this century he was well known for his writings on acute abdominal conditions, and in particular on the surgery of diseases of the appendix. A book on the latter subject, written in collaboration with Mr. Edred Corner, was published first in 1904, and Mr. Battle's clinical lectures on the acute abdomen, which appeared in book form in 1911, also passed into a second edition.

William Henry Battle was associated with St. Thomas's Hospital during the whole of his active career. After a distinguished pupilage in the medical school he obtained the diplomas of M.R.C.S. and L.S.A. in 1877, and in 1880 became a Fellow of the Royal College of Surgeons of England. From 1881 to 1885 he edited the St. Thomas's Hospital Surgical Reports, and about this time was elected assistant surgeon to the hospital and lecturer on practical surgery. In 1890 he was appointed Hunterian professor of surgery and pathology at the Royal College of Surgeons, jointly with William Watson Cheyne, John Langton, and Walter Pye. At the Royal Free Hospital and the East London Hospital for Children (now Princess Elizabeth of York Hospital) he served in turn as assistant surgeon and surgeon. At St. Thomas's, after promotion to full surgeon, he was appointed joint lecturer on systematic surgery. He joined the British Medical Association in 1883, and at the Annual Meeting at Carlisle in 1896 he held office as honorary secretary of the Section of Surgery.

Mr. Battle was for more than twenty years associated with the editorial staff of the *Lancet* as a writer on surgical subjects. He contributed an article on traumatic rupture of the intestines to the *Edinburgh Medical Journal* in 1907, and three years later chose intra-abdominal injuries as the subject of his oration before the Medical Society of London. Battle and Corner's *Surgery of the Diseases of the Appendix Vermiformis* was a useful clinical handbook which enjoyed well-deserved popularity during the ten years before the war; the authors stated in a clear-cut manner their views and their practice on the operative treatment of acute appendicitis. In his *Clinical Lectures on the Acute Abdomen* Mr. Battle put clearly and succinctly the various abdominal catastrophes that are met with, and indicated the treatment on broad lines. Young surgeons and family practitioners found in it a great amount of helpful information about very common but often desperate cases which make large demands on their professional skill and their strength of character.

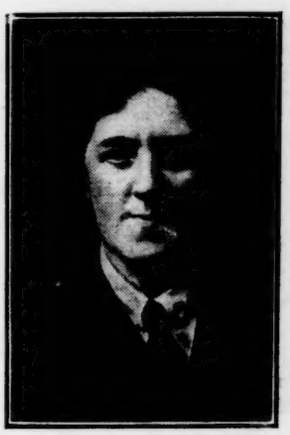
Sir CUTHBERT WALLACE, P.R.C.S., writes:

Every surgeon has attributes by which he is remembered by those that he taught. In thinking of Battle the one thing that stands out in my memory was his devotion to his duty, as shown by his regularity of attendance at St. Thomas's on his hospital days. Nothing seemed to interfere with his hospital work, and a student was sure to find him in his ward at the appointed time, and was equally sure of having a profitable afternoon. His teaching was simple, clear, direct, and seemed to supply just what the student wanted. This resulted in his having a large following whenever he appeared. He had a wide knowledge of the literature of his subject, and no doubt his constant writing for the journals crystallized useful data in his mind and enabled him to distinguish facts from theories, much to the advantage of those he taught. As a surgeon he may be described as sure and safe rather than brilliant. As an operator he was neat, quiet, and without fuss. Many men still practising must have grateful thoughts for Battle.

AMY SHEPPARD, O.B.E., M.B., D.P.H.

Consulting Ophthalmic Surgeon, Elizabeth Garrett Anderson Hospital

Dr. Amy Sheppard passed away on January 22nd in her country home at the age of 75. She was one of the early students of the London School of Medicine for Women, and took the M.B.Lond. in 1892 and the D.P.H.Camb. in 1898—the first woman to take this diploma. A wide reader; an amateur botanist, gardener, and sculptor; a keen Esperantist; a charter member of the Soroptomist Club, in which she was active and valued, she will be greatly missed by her many friends. Success as an ophthalmic surgeon naturally followed her intense devotion to her profession, and in addition to a wide private practice she gave her services to a large number of institutions, including the Women's Settlement Hospital, Canning Town; the Clapham Maternity Hospital; the Q.M.A.A.C. Hospital, Isleworth; the East London Hospital for Children, Shadwell; and the Royal London Ophthalmic Hospital. She was also on the council of the Medical Women's Federation for some years, and served on various committees.



The fame of Lieut.-Colonel Henry Smith, I.M.S., attracted her to India. Colonel SMITH writes:

"I have known Dr. Amy Sheppard for a long time, and always regarded her as a person with whom no number of wrongs would make a right and with whom truth must prevail should the heavens fall. On this basis she superimposed the humanizing study and practice of medicine, to which she contributed everything that is generous, gentle, and kind. Dr. Sheppard came out to India a few years before the war to spend a season with me at the hospital at Amritsar. She was specially interested in the ophthalmological side, and under my guidance she became a competent operator in the section for cases of cataract and glaucoma. She was interested in the controversy I was conducting on the complete *versus* the partial extraction of the lens, and wished, among other things, to see for herself how the matter stood on large figures such as I had available. Like many others, she became a whole-hearted convert to intracapsular extraction." On her return Dr. Sheppard published a paper on "Extraction of Lens in its Capsule, with special reference to 'Jullundur' Smith Operation" (*British Medical Journal*, 1911).

Often through her life very strong convictions on the rights of women brought Dr. Sheppard into conflict with the authorities. "There should be no taxation without representation," and so distraints for rates and taxes repeatedly brought crowds about her house in Upper Berkeley Street, which was also the scene of adventures during Mrs. Pankhurst's suffragist campaign—amusing now as an old story, when the police were often baffled in carrying out the "cat-and-mouse" policy.

AN OLD COLLEAGUE writes:

Amy Sheppard had a gracious personality: her consideration for her patients and colleagues was punctilious, and she spoke and wrote with great courtesy, yet behind this was a strong character. She was on terms of close personal friendship with the pioneer medical women Mrs. Garrett Anderson and Miss Julia Cock. Because she was in consulting practice and also held the post of honorary ophthalmic surgeon at the Elizabeth Garrett Anderson Hospital she was precluded from taking an active part in the militant suffragists' campaign.

In the autumn of 1914 a unit of medical women was organized by Dr. Flora Murray and Dr. Louisa Garrett Anderson. They were offered in 1915 a general military hospital of 520 beds in buildings in Endell Street, London, known to fame as Oliver Twist's Workhouse. Here Dr. Sheppard, graded as captain R.A.M.C., was an original member of the staff, and served for four and a half years. The grey uniform on her tall figure was striking among the convalescent soldiers in the courtyard, and rumour, incorrect as usual, attributed to her a large share of the broken windows. Her profession was the absorbing interest of her life, and when a "tired heart" showed itself about a year ago retirement was a grief. Her life was a real interpretation of the Christian precept "to love your brother as yourself." Recently, in speaking of her life to an old friend, she said, "I have had a wonderful life and had a good innings." No one can have more.

FARQUHAR MACRAE, M.B., C.M.

Consulting Surgeon, Western Infirmary, Glasgow

The death took place on February 2nd at St. Andrews, Fife, of Dr. Farquhar Macrae, who for many years was a well-known surgeon in Glasgow.

After graduating M.B., C.M. at the University of Glasgow in 1895 Dr. Macrae acted as resident surgeon in the Royal Hospital for Sick Children at Glasgow, and afterwards for a time practised in Leeds. Returning to Glasgow, he held a junior post on the staff of the Western Infirmary, and afterwards became surgeon to the Victoria Infirmary of that city. He acted for a time as examiner in surgery to the University of Edinburgh, and he was later appointed honorary surgeon to the Royal Hospital for Sick Children, Glasgow, and consulting surgeon to the Western Infirmary and to the Ayr County Hospital and municipal hospitals in Glasgow. As a surgeon he was well known in the West of Scotland, and interested himself particularly in the surgery of the gall-bladder. He was joint author of the article on "Infections of the Gall-bladder and Bile Ducts" in the *Encyclopaedia Medica*, 1901, and contributed the article "Diagnosis in Abdominal Disease" to Finlayson's *Manual of Clinical Medicine*, 1927, and an article, "Diagnosis of Peritonitis occurring during Enteric Fever," to the *Transactions of the Medical Society of Glasgow*, 1905.

Under the provisions of the Medical Act, 1886, the General Medical Council arranges at ten-year intervals for inspection of the final or qualifying examinations of the twenty-three licensing bodies in Great Britain and Ireland. The inspectors must be satisfied that the standard of proficiency required from candidates is such as to guarantee possession of the knowledge and skill needed for the efficient practice of medicine, surgery, and midwifery. When the cycle of inspection came round in 1930 Farquhar Macrae was entrusted with the duty of inspecting and reporting on the examinations in surgery of all the licensing bodies. He made an admirable inspector, always courteous, tactful, and considerate, but nevertheless ready with criticism when the occasion demanded. His success as an inspector of surgery gave such satisfaction that before he had completed that work the Council sought his services in another capacity. While dental education and examination is under the direction of the General Medical Council, the Dentists Act of 1878 contains no such definite instructions regarding inspection as does the Medical Act of 1886. Supervision of dental standards depends on the results of "visitation." Protesting that he had no knowledge of dentistry, Farquhar Macrae was nevertheless persuaded by the President of the Council to undertake the duties of visitor, having associated with him Mr. C. F. Rilot, a qualified medical man practising dentistry. Macrae concerned himself especially with the amount of instruction in medical subjects arranged for the dental student. The reports by him and Mr. Rilot were considered by a specially enlarged Dental Committee of the G.M.C., and a very wide revision and a great improvement in the dental curriculum was the result.

At the beginning of 1934 Macrae went out to India on the recommendation of the President of the G.M.C. to take up the duties of secretary of the Medical Council of India, newly constituted under the Act of 1933. The Indian authorities indicated that they wished for someone who was intimately familiar with the provisions of medical education in this country to be their first secretary, adding that it would be an advantage if he were an experienced and competent examiner in one of the three main subjects. No one fitted all these conditions so well as Macrae. He realized that there was a great work to be done, and so he embarked on his last adventure. He knew he would have difficulties, but he faced them in the right spirit, worked well with his Indian colleagues, and made friends with most of them. By a sad coincidence, the first report on the final examinations of the first three Indian universities whose inspections have been completed reached this country just after his death.

Dr. Macrae is survived by his widow. The interment took place in the Western Cemetery, St. Andrews, on February 5th, and was largely attended by representatives of the medical profession in St. Andrews and by former colleagues from the Glasgow medical school.

THE LATE PROFESSOR BLAIR-BELL

Mr. VICTOR BONNEY writes: May I join in the tributes paid to Blair-Bell. He was, I think, the most picturesque figure in medicine in our time. I did not always see eye to eye with him, but my admiration for his enthusiasm, energy, and singleness of purpose never failed. The fierce ardour with which he pursued his ideals has burnt him out prematurely, and our art is the poorer for his passing.

Professor J. HENRY DIBLE writes: May I, in the interests of accuracy, correct a statement in your notice of February 8th upon the late Professor Blair-Bell, which reads "in 1923 a Cancer Research Committee was founded by the University of Liverpool, in order to subsidize and facilitate the researches upon Blair-Bell's theories." The committee to which you refer, which later took the title of the Liverpool Medical Research Organization, was not a committee of the University of Liverpool, but a privately constituted body, formed of friends and colleagues of the late Professor Blair-Bell, for the purpose which you state.

The death occurred on January 25th at Cowbridge, Glamorgan, of CHARLES BOOTH MELLER, M.R.C.S.Eng., L.R.C.P.Ed., formerly of Shire Hall, Sheffield, who for over fifty years had carried on an extensive practice in Cowbridge and the surrounding district. For forty years Dr. Meller had been medical officer of health for Cowbridge Rural District Council and district medical officer and public vaccinator for the Bridgend and Cowbridge and Cardiff Boards of Guardians, a position from which he had only recently retired. He was for many years a member of the British Medical Association. He belonged to a well-known Sheffield family closely connected with the medical profession, his uncle having practised in that city for many years, and his father there and in several other parts of the country. Both Dr. Meller and his father were educated at Bart's. He is survived by his widow, Dr. Emily M. Meller, and four daughters.

Dr. ALEXANDER WAUGH, who died at Prenton, Birkenhead, on January 29th, aged 71, was the eldest son of Provost Waugh, of Sanquhar, Dumfriesshire, and studied medicine in Edinburgh and Glasgow, graduating M.B., C.M. at the University of Glasgow in 1899. He then began practice at Skipton, Yorkshire, and became medical officer to the local infectious diseases hospital and to the Poor Law guardians, and honorary surgeon to the Skipton and District Hospital. Dr. Waugh left the town for reasons of health, and after a voyage to India settled at Birkenhead, becoming port medical officer to the Clan Line. On the outbreak of war he joined the R.A.M.C. with the temporary rank of captain, and afterwards acted for some time as medical officer under the Ministry of Pensions. He joined the British Medical Association in 1915.

With the death on January 11th of Dr. MURDO TOLME MACKENZIE of North Uist, Inverness, in his seventy-eighth year, there passed a most energetic and widely experienced practitioner, whose work in the Scottish islands was pre-eminent. He was educated at Daniel Stewart's College and Edinburgh, where he graduated M.B., C.M. in 1880. He was for a time resident surgeon at Greenock Infirmary and Fever Hospital, and was early appointed medical officer in charge of the whole parish of North Uist, as well as of Grimsay, Heisker, and Berneray, until the reorganization recently of the Highlands and Islands service, when his huge district was reduced to the confines of the west side of North Uist. Here he was medical officer of health, medical officer of the Post Office, medical examiner for recruits, and, after the war, medical referee to the Ministry of Pensions. Other appointments held by him included those of referee under the Workmen's Compensation and the Teachers' Superannuation Acts, surgeon to the Lochmaddy Prison and the Long Island Poorhouse and Asylum, medical officer to the Monach Lighthouse, and medical referee to the Prudential Assurance Company. Dr. Mackenzie joined the British Medical Association in 1911, and was a Fellow of the Society of Antiquaries of Scotland. He was a justice of the peace for Inverness-shire, and acted as honorary sheriff substitute for the county. His life was one of incessant battling against the hardships and emergencies consequent on the nature of his environment, and his courage, wisdom, and devotion to duty won for him widespread respect and friendship. He will long be remembered.

Dr. RICHARD WARING TAYLOR, whose death from pneumonia occurred on February 5th after only a few days' illness, was born in Yorkshire, and qualified at Leeds. After qualification he practised in Gomersal, serving in the R.A.M.C. with the rank of captain during the great war. Fifteen years ago he removed to Islip, and immediately after coming to Oxfordshire took over the secretaryship of the County Panel Committee, a post which he still held at the time of his death. Always interested in medico-political subjects, he made his Panel Committee work a hobby, and developed a knowledge of the National Health Insurance Act which has been of untold value to the men in this county. With a Yorkshireman's directness and, at times, bluntness of speech he combined a sense of humour and an intense love for fair play, which laid the foundation of a cordial relationship between the medical representatives and the lay members of the Insurance Committee, which remains as a standing testimony to his worth. To newcomers to the district he was always available for help and advice, and would always go to endless trouble to smooth difficulties himself rather than have official action in cases of minor defaults. As an example of his capacity for work, when collecting pledges during the last negotiations over the Act he visited personally every man in the area while carrying on his normal routine of practice. A member of the executive of the Oxford Division of the B.M.A., he took a more than ordinarily useful part in negotiations with local authorities and other bodies. Recently he took a prominent part in discussions with the hospital authority on the overcrowding of the out-patient department, a subject on which he held strong views, and was largely instrumental in effecting a satisfactory conclusion. In his work Dr. Waring Taylor showed, above all things, a kindness and real affection for his patients, particularly those of the poorer classes, which was returned in no small measure. He leaves a widow, three sons, and a daughter. His eldest son is in practice in Leicester.

H. D. W.

Dr. CYRIL REGINALD LUNN, who died at his residence in Olton, Birmingham, on January 27th, had been a member of the British Medical Association since 1892. He was trained at Queen's College, Birmingham, and qualified M.R.C.S., L.R.C.P. in 1892. Ten years later he graduated M.B., Ch.B.Birm. He was actively engaged in general practice in that city, taking a special interest in diseases of the chest. He was chairman of the Tuberculosis Board of the Ministry of Pensions for the West Midland region, and deputy medical officer for Solihull. He had previously held the appointment of medical officer to the Cornwall Works Dispensary. Dr. Lunn was an active member of the Midland Medical Society, and in 1921 and the following year contributed to the *Midland Medical Journal* articles on pulmonary tuberculosis from the general practitioner's point of view, and the differential diagnosis of bronchitic disease and pulmonary tuberculosis.

Dr. HENRY LEEDS HARRISON of Worthing, who died at the end of last month, had been a member of the British Medical Association for forty-six years. From Cambridge he went as a medical student to St. Bartholomew's Hospital. He obtained the diploma M.R.C.S. in 1887, and in the following year graduated M.B.Cantab. His early appointments included those of house-physician to Leicester Infirmary, junior resident medical officer to the Metropolitan Hospital, and, more recently, honorary surgeon to the Cornelia Hospital, Poole. He was actively associated with the early growth of the last-named institution, and when he went to live at Worthing he transferred his interest to the local hospital, to which he was for many years physician and latterly honorary consultant physician. Dr. Harrison was a lecturer and examiner for the St. John Ambulance Association, and a member of the Brighton and Sussex Medico-Chirurgical Society.

Dr. WILLIAM CRAN DUTHIE, who died in Blackburn Royal Infirmary on January 24th, had been a member of the British Medical Association for forty years, and was chairman of the Blackburn Division in 1933–4. Born at Kinkell, Perthshire, in 1871, he was educated in the University of Aberdeen, where he graduated M.B., C.M. in 1893. Nearly the whole of his subsequent professional life was spent in Blackburn, where he built up a large practice and held several appointments, including those of medical officer in charge of the male venereal clinic at the Blackburn Royal Infirmary, honorary physician to

the Blackburn District Nursing Association, and medical referee to the Scottish Equitable Assurance Company. He was for fifteen years surgeon to the Blackburn Royal Infirmary, and on his retirement in 1931 was elected consulting surgeon. Dr. Duthie is survived by his widow and a large family. One son was practising in partnership with him, while one daughter is a nurse and another is a radiographer.

We regret to announce the sudden death on February 4th of Dr. R. V. FAVELL, who practised for a good many years in Sheffield and was honorary anaesthetist to the Royal Hospital, but who gave up active medical work in 1923. His grandfather, William Favell, was one of Sheffield's best-known surgeons in his day, and his father, Richard Favell, Ch.M., was also one of the leading members of the medical profession in Sheffield and district, being honorary surgeon to the Jessop Hospital for Women for nearly forty years. Richard Vernon Favell was born in 1881, and, like his father before him, went to study medicine at St. Bartholomew's Hospital, where, after qualifying M.R.C.S. and L.R.C.P. in 1906, he held the posts of house-surgeon and resident midwifery assistant and was president of the Abernethian Society. At Bart's he was much liked by his contemporaries, and showed all-round competence in work and games. During the war he served as medical officer with the R.F.A.; his younger brother was killed in action in 1916. Dr. Favell joined the British Medical Association in 1911 and remained a member after his retirement from practice, when he went to live at St. Buryan, in Cornwall. He was elected some years ago a member of the Cornwall County Council.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

Mr. J. Ramsay MacDonald took his seat in the House of Commons on February 5th as Member for the Scottish Universities.

Sir Francis Fremantle has been appointed to the Publications and Debates Committee of the House of Commons.

The House of Commons on February 4th approved the appointment of a Joint Committee of Lords and Commons to report on the better conservation and organization of water resources in England and Wales. This committee will resume the work of a similar committee set up last session.

Arrangements approved by the Secretary for Scotland for the supply of milk at reduced rates in schools within the area of the Aberdeen and District Milk Marketing Scheme were submitted to Parliament on February 5th.

The National Health Insurance Fund Accounts (English, Welsh, and Scottish) for 1934 were laid in the House of Commons on February 10th.

The Unemployment Insurance (Agriculture) Bill was read a second time by the House of Commons on February 6th, and its consideration by a Standing Committee was ordered. The Standing Committee on the Employment of Women and Young Persons Bill was convened for February 13th.

Bills were presented by Sir Kingsley Wood on February 5th to confirm provisional orders in respect of the Bedford Joint Hospital District, the Mid-Sussex Joint Hospital District, and the St. Albans Joint Hospital District.

The Surrey County Council Bill, read a first time in the Commons on February 6th, proposes, among other matters, to authorize that council to enact provisions with respect to the control of swimming baths.

On February 10th Mr. Tinker presented the Public Health (Coal Mines Refuse) Bill, the object of which is to amend the Public Health Act, 1875, in regard to coal mine refuse liable to spontaneous combustion.

The Royal National Pension Fund for Nurses Bill was read a first time by the House of Lords on February 6th.

The House of Commons this week discussed the second reading of the Education Bill and motions about maintenance allowances for scholars and the strain of their home-work. The Sugar Reorganization Bill was read a second time and import duty orders approved.

On February 11th Sir Ernest Graham-Little, Sir John Withers, and eight other Members for university constituents agreed to put down a motion praying for the deletion of Rule 29 of the Poisons Rules then lying on the table of the House. They take objection to the wording of this rule lest it interfere with the liberty of doctors' dispensing, and they also object to its restriction upon the supervision by university graduates of pharmaceutical factories other than those producing biological products.

In the House of Lords on February 11th, on the motion of Lord Luke, the report of amendments to the Voluntary Hospital (Paying Patients) Bill was agreed to.

In the House of Lords on February 11th the Unemployment Assistance (Temporary Provisions) (Extension) Bill was read a second time.

Medicines and Medical Appliances Bill

Mr. ARTHUR DUCKWORTH, Parliamentary Private Secretary to Mr. Shakespeare, secured seventh place in the private members' ballot to introduce Bills, and used this privilege to introduce on February 7th the Medicines and Medical Appliances Bill. The second reading of this measure will be the first order of the day on March 27th, and if it then secures the approval of the House it will have the sympathy of the Ministry of Health during its later stages. The Bill is the same as the draft to which approval was given last session by the representatives of professions and commercial interests. It was then sponsored by Captain G. S. Elliston, who will second its second reading on March 27th. Sir Francis Fremantle will speak in its support that day. Both back the Bill, as do Dr. Howitt, Captain A. V. G. Dower, Mr. J. A. F. Duncan, and Mr. Buchan-Hepburn. The long title of the Bill is:

> Medicines and Surgical Appliances (Advertisement) Bill: "to prohibit the holding out of medicines, surgical appliances or treatment as effective in relation to certain ailments, and the publication of invitations to diagnosis or to the treatment of certain ailments by correspondence, and for purposes incidental thereto."

OTHER PRIVATE MEMBERS' BILLS

Other Bills presented on February 7th by members successful in the ballot, with the dates named for second reading, are:

Workmen's Compensation Bill "to amend the law relating to workmen's compensation" (Mr. Hardie), February 28th.

Offices Regulation Bill "to regulate offices and the employment of young persons therein" (Mr. Creech Jones), March 13th.

Representation of the People Bill "to abolish the business premises qualification for the franchise and the university franchise" (Mr. Short), April 3rd.

Representation of the People Acts (Amendment) Bill "to amend the Representation of the People Act in respect of the voting of sick persons" (Mr. Wise).

Variola Minor in England and Wales

On February 11th Mr. BROMFIELD asked the Minister of Health if he would consider the advisability of a special investigation into the circumstances attending the outbreak of variola minor in certain limited areas of this country during 1922–34, to ascertain the causes of its greater incidence in mining areas, and whether the disease affected mainly those areas where infant vaccination had declined most. Sir KINGSLEY WOOD replied that during the years referred to small-pox occurred in forty-nine of the sixty-one counties in England and Wales. The circumstances in which the disease occurred were described in the annual reports of the Chief Medical Officer of his Department, and in a review published

in 1931, entitled *A Review of Certain Present Aspects of Small-pox Prevention in Relation particularly to the Vaccination Acts, 1867 to 1907.* The published reports contained full statistics of the numbers of vaccinated and unvaccinated children respectively who contracted the disease, and they afforded ample evidence of the value of vaccination as a preventive of the disease. In those circumstances he did not think any special investigation was necessary.

Thefts of Drugs

On February 11th Sir JOSEPH LAMB asked the Home Secretary if his attention had been called to the increasing number of cases where dangerous drugs and poisons had been lost in transit or stolen from unattended vehicles, and to the danger caused thereby to the general public. Sir JOHN SIMON replied that there was, he thought, no reason to suppose that there had been any increase in the number of such cases, though they had had more publicity of late by reason, in particular, of the fact that broadcasting was now employed when a loss or theft of this kind was reported to the police, and it was thought necessary that the public should be warned by this means. The remedy seemed to lie in the exercise of more care and good sense by those concerned, and he hoped that the wider publicity would help to achieve that result.

Sir JOSEPH LAMB asked whether, if that did not bring about the desired result, the Home Secretary would bring in more stringent regulations to prevent these happenings. Sir JOHN SIMON said the hon. member would see that there would be danger, if they were not careful, of restraining persons from reporting such losses for fear of the consequences to themselves. It was much better that they should report the loss quickly ; then the police could be helpful.

Gas and Oxygen Anaesthesia

Mr. E. DUNN gave notice on February 11th that he would ask the Minister of Health on February 13th whether any statistics were available which showed the difference in the mortality rate when gas and oxygen was used as an anaesthetic, as against the use of chloroform and ether, in municipal and voluntary hospitals. He further gave notice to ask in what number of municipal and voluntary hospitals respectively was gas and oxygen used as a routine anaesthetic for major operations and for midwifery.

Medical Attention for Persons under Arrest

On February 11th Mr. JAGGER asked the Secretary of State for Scotland what were the regulations governing medical attendance on persons detained under arrest at police stations pending appearance before the magistrates, and if such arrested persons had the right to see a doctor on request. Sir GODFREY COLLINS replied that he was informed that the chairman of the Public Health Committee to West Lothian was meeting the Department of Health on February 13th to discuss this matter. In these circumstances it would be undesirable for him to make any statement at present.

Mr. Jagger put the same question to the Home Secretary, and Mr. GEOFFREY LLOYD, who replied, said that all police forces had instructions to take special care in regard to the treatment of prisoners suffering from illness, to call a doctor to examine any prisoner who complained of illness or showed symptoms of being in a feeble state of health, and to have him removed to hospital if the doctor thought it necessary. If such a person wished to call in a doctor selected by himself steps would be taken to meet his wishes if possible, but the police would not wait for a request or complaint from him if they considered that he needed medical attention.

Medical Expenses in Workmen's Compensation Statistics.—In reply to Mr. Tom Smith on February 6th Mr. GEOFFREY LLOYD said there would be great difficulty in showing, in future annual statistics on workmen's compensation, the medical expenses as a separate item. In the Accident Offices Association, which included most of the larger insurance companies, medical expenses were established at 1¾ per cent. of the premium income.

Nutrition Surveys of School Children.—Answering Mr. D. J. B. Joel on February 6th Mr. OLIVER STANLEY said certain local education authorities had acted, or proposed to act, on the Board of Education's suggestions that periodical nutrition surveys should be held at which children not receiving meals would be passed under review. Areas in which complete or partial surveys had been or would be held included Swansea, Gateshead, Norwich, Liverpool, and Workington.

Mental Treatment Accommodation.—Answering Mrs. Tate on February 6th Sir KINGSLEY WOOD said the number of persons per 10,000 of population receiving mental treatment in private homes and hospitals was 25.4 in 1900 ; 26.3 in 1920 ; 31.3 in 1930 ; and 32.8 in 1935. There was sufficient accommodation for every case, except that in 1930 and 1935 the number of beds available in some public mental hospitals was not sufficient to enable the prescribed standards of bed space to be fully observed. Local authorities in the areas concerned were actively engaged in providing additional accommodation where needed.

Spa Treatment as Health Insurance Benefit.—Mr. MANDER asked the Minister of Health on February 6th to consider the desirability of arranging that spa treatment should be an additional benefit under national health insurance. Sir KINGSLEY WOOD, in reply, said the present list of additional benefits afforded approved societies a wide variety of forms of remedial treatment, and surplus funds of societies available as a result of the last valuation had already been allocated on this basis. The addition of spa treatment was considered, but was not selected. If before the date of the next valuation he had evidence of a fairly widespread desire on the part of societies for the suggested addition Sir Kingsley would reconsider the matter.

Bombing of Ambulance Units in Abyssinia.—On February 10th Mr. EDEN, replying to Mr. Watkins, who asked on how many occasions Italian aircraft had bombed Red Cross units in Abyssinia, said that according to such information as was available he understood that the American hospital at Dessie was bombed on December 6th last. On December 30th the Swedish ambulance, operating with the Ethiopian forces on the southern front, was virtually destroyed by aircraft near Dolo ; and on January 4th the Ethiopian Red Cross Ambulance No. 1, the staff of which included two British subjects, was bombed and machine-gunned near Dagabur. The only wholly British ambulance now serving in Ethiopia had not suffered as the result of Italian air action.

Milk in Schools Scheme to be Prolonged.—Dr. WALTER ELLIOT announced on February 10th that the Government intended to introduce shortly a Bill prolonging the Milk Act, 1934. This Act instituted the present national scheme for provision of milk in schools and also made enactments for the improvement of the quality of milk sold to the public and for the safeguarding of milk prices. The schools section is due to lapse in September, 1936, failing new legislation, and the other sections in March, 1936. The Bill announced by Dr. Elliot will continue these schemes until September, 1937. Before that time the Ministry of Agriculture hopes to secure another Bill giving sanction to an improved permanent system of milk grading and marketing and for provision of milk to schools. This completer Bill cannot be framed until the report of the Commission on Milk Supplies has been received—probably in April or May.

Conditions of Service of Mental Hospital Nurses.—Sir FRANCIS FREMANTLE asked for the orders or regulations governing off-duty hours and facilities for nurses in mental hospitals, and whether Sir Kingsley Wood would inquire into their adequacy, considering the special need in such occupation of daily and weekly change of environment. Sir KINGSLEY WOOD replied, on February 10th, that hours of duty and conditions of service for nurses in mental hospitals were determined by the visiting committees of those institutions. The majority had adopted the scheme recommended by the Joint Conciliation Committee representing employers and nurses. An increasing number of local authorities provided change of environment and recreational facilities by establishing nurses' homes for mental hospital staffs. He was not aware of circumstances indicating the necessity for an inquiry, but invited Sir Francis to communicate to him any cases he might have in mind.

Report on Nutritive Value of Milk.—Mr. SHAKESPEARE, replying to Sir Joseph Lamb on February 11th, said that the Minister of Health had received a report, from the committee set up to inquire into dietetics and nutrition, on the nutritive value of milk. He proposed to publish the report.

Notes in Brief

On February 11th Captain Crookshank told Mr. David Davies that the number of explosions in collieries during 1935, including all reported ignitions of fire-damp, was fifty.

Major Tryon has recently appointed a committee to consider the best means of securing the rapid setting-up of emergency telephone calls, including those to ambulance stations.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Vice-Chancellor has authorized the issue of an amended class-list for the Third M.B. examination, Part II (principles and practice of physic, pathology, and pharmacology) to take the place for all purposes of the list published on December 23rd, 1935 (*British Medical Journal*, January 4th, p. 38). The name of F. B. Thomas has been added to the list of those who were examined and approved.

With the object of encouraging original medical research the Grocers' Company offers annually three scholarships, each of £300 a year, tenable for one year and renewable for a further period of one or two years. Candidates must be British subjects under 35 years of age. Applications must be made before April 15th. Forms of application may be obtained from the Clerk of the Company, Grocers' Hall, London, E.C.2. Further particulars may be seen at the University Registry.

S. Nevin, M.D., Queen's University, Belfast, has been appointed to the Pinsent-Darwin Studentship, valued £225 a year, for the study of mental pathology, for three years from January 1st.

At a congregation held on February 7th the following medical degrees were conferred:

M.B.—W. A. Law.
B.CHIR.—*K. G. F. Mackenzie.

* By proxy.

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE

A course of four lectures on "The Endocrine Organs in Relation to Metabolism" will be given by Dr. C. Reid in the Physiology Theatre of the College, Gower Street, W.C., on Mondays, March 2nd, 9th, 16th, and 23rd, at 5 p.m. The lectures are open, without fee or ticket, to students of the University and others interested in the subject.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Sir Bernard Spilsbury will deliver the Croonian Lectures, on "Doctrine of Inflammation," at the College, Pall Mall East, S.W., on May 19th, 21st, and 26th, at 5 p.m.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

An extraordinary meeting of the College was held on February 4th, when an address of condolence and loyalty to the King, and an address of sympathy to Queen Mary, were approved.

A quarterly meeting of the College followed, with the President, Dr. W. T. Ritchie, in the chair.

Dr. John Philip Cameron (Edinburgh) was introduced and took his seat as a Fellow of the College.

Dr. Prag Nath Kapur (Delhi) and Dr. Venkatasubha Mahadevan (Madras) were elected Fellows of the College.

Dr. J. Godwin Greenfield was appointed Morison Lecturer; Sir Thomas Lewis, George Alexander Gibson Lecturer; and Dr. J. D. Gilruth, Dr. Alexander Black Lecturer, all for 1936.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow held on February 3rd, with the President, Professor Archibald Young in the chair, Dr. Sailes Chandra Guha (Rangoon) was admitted a Fellow of Faculty.

The Services

LOE-AGRA OPERATIONS: NORTH-WEST FRONTIER OF INDIA

The King has approved the award of the Military Cross to Temporary Captain Patit Paban Chowdry, M.B., B.S., late I.M.S., for distinguished services rendered in the field in connexion with the Loe-Agra operations, North-West Frontier of India, during the period February 23rd to April 13th, 1935.

In addition to Temporary Captain Chowdry the names of Major A. H. Craig, I.M.S., and Temporary Captain S. P. Bhatia, I.M.S., have been brought to notice by His Excellency the Commander-in-Chief in India for distinguished services rendered in connexion with the Loe-Agra operations, North-West Frontier of India, February 23rd to April 13th, 1935.

DEATHS IN THE SERVICES

Major Arthur Edward Milner, R.A.M.C. (ret.), died in London on February 4th, aged 68. He was born on November 7th, 1867, and was educated at Bristol and at Guy's Hospital, where he took the Clarke scholarship in surgery in 1890–1 and the Saunders scholarship in medicine and surgery in 1891–2. He entered the Army as surgeon lieutenant on July 28th, 1894, taking the Montefiore prize in military surgery at Netley, became major on April 28th, 1906, and retired on July 28th, 1914. He served in the Tirah campaign of 1897–8 on the North-West frontier of India, receiving the frontier medal with two clasps; and in the South African War in 1899–1900, when he served in the operations in Natal, was present at the action at Tahana, and took part in the defence of Ladysmith, gaining the Queen's medal with three clasps. When the war of 1914–18 began he was recalled from the Reserve of Officers to the active list on August 6th, 1914, and served in that war.

Surgeon Captain Herbert William Gibbs Doyne, R.N. (ret.), died at the Royal Naval Hospital, Chatham, on January 23rd, aged 75. He took the L.R.C.P. & S.Ed. in 1884, after which he joined the Royal Navy as surgeon, and attained the rank of surgeon rear-admiral on September 13th, 1919. He served throughout the war of 1914–18. He joined the British Medical Association in 1885, and at the annual meeting at Oxford in 1904 served as honorary secretary of the Navy, Army, and Ambulance Section.

Medical News

The first clinical meeting of the newly formed Society of Radiotherapists will be held at 11, Chandos Street, W., on Friday, February 21st, at 4.30 p.m., when there will be a discussion on "The Technique of Radiotherapy in Carcinoma of the Breast which has not been previously treated," to be opened by Mr. Geoffrey Keynes, followed by Dr. W. M. Levitt.

On Thursday, February 27th, at 5 p.m., Mr. C. H. Barney will give an address on "Voluntary Hospital Finance," before the University College Hospital Medical Society, Gower Street, W.C.

A meeting of the Royal Microscopical Society will be held at B.M.A. House, Tavistock Square, W.C., on Wednesday, February 19th, at 5.30 p.m., when papers will be read by Mr. R. Ralph Fowell, on the fibrillar structures of protozoa, and by Dr. G. M. Findlay, on a new virus disease of mice.

A general meeting of the Society of Medical Officers of Health will be held at 1, Thornhaugh Street, Russell Square, W.C., on Friday, February 21st, at 5 p.m., when a discussion on "Prevention of River Pollution" will be opened by Dr. W. M. Ash. At the same place and on the same day, at 8 p.m., there will be a joint meeting of the Tuberculosis and Dental Officers Groups, at which there will be a discussion on "Dental Treatment of Tuberculous Patients," to be opened by the presidents of the two groups, followed by Mr. Sidney Smith; also a meeting of the Maternity and Child Welfare Group, at 8.30 p.m., when Dr. Andrew Topping will read a paper on "Certain Factors Influencing Maternal Mortality and the Part Played in Combating Them."

Meetings of the Tuberculosis Association will be held at 26, Fortland Place, W., on Friday, February 21st. At 5.15 p.m. papers on "Primary Tuberculosis in Children and its Relationship to Meningitis" will be read by Dr. H. H. Scott and Dr. C. H. C. Toussaint, and at 8.30 p.m. Sir Henry Gauvain and Mr. G. R. Girdlestone will read papers on "The Treatment of Tuberculous Lesions of Bones and Joints."

The University of London Animal Welfare Society ("ULAWS") will hold a technical discussion on "Poisons for Rodents" at the College of the Pharmaceutical Society, 17, Bloomsbury Square, W.C., on Thursday, February 27th, at 5.30 p.m.; tea at 5 p.m. The chairman will be Professor J. H. Burn, M.D., and the speakers include Mr. J. G. Wright, F.R.C.V.S., Mr. J. D. Hamer, F.I.C., and Dr. G. D. Lander. The object of the discussion is to explore the feasibility of selecting and devising poisons with a view to humane considerations. Students and graduates in chemical, medical, and other sciences, sanitary officers, and members of the University will be welcomed, and are asked to inform the Hon. Secretary, ULAWS, 42, Torrington Square, W.C.1, of their intention to be present.

The Fellowship of Medicine announces that surgical tutorial classes will be given at the National Temperance Hospital, at 8.30 p.m., on February 18th, 20th, 25th, and 27th. For Primary F.R.C.S. candidates a series of lecture-demonstrations in anatomy and physiology will be given at the Infants Hospital on Mondays, Wednesdays, and Fridays, at 8 p.m., from February 24th to April 24th. Advanced courses include thoracic surgery at Brompton Hospital, February 24th to 29th; M.R.C.P. clinical and pathological classes at National Temperance Hospital on Tuesdays and Thursdays at 8 p.m., February 25th to March 12th; orthopaedics at the Royal National Orthopaedic Hospital, March 9th to 21st; M.R.C.P. classes in chest and heart diseases at Royal Chest Hospital, Mondays, Wednesdays, and Fridays at 8 p.m., March 16th to April 4th; classes in chest diseases at Brompton Hospital, twice weekly at 5 p.m., March 8th to April 4th. Week-end courses, suitable for general practitioners, are as follows: children's diseases at Princess Elizabeth of York Hospital, February 22nd and 23rd; chest diseases at Brompton Hospital, March 7th and 8th; clinical surgery at Royal Albert Dock Hospital, March 14th and 15th; general medicine at Miller General Hospital, March 21st and 22nd. Syllabuses can be had from the Fellowship of Medicine, 1, Wimpole Street, W.

A syllabus has been issued of the new special courses organized by the Berliner Akademie für Arztliche Fortbildung during the present year. It may be obtained from the Anglo-German Academic Bureau, 45, Russell Square, W.C.1. These courses cover the fields of pathological anatomy, pharmacology, bacteriology, physical chemistry, internal medicine, radiology, neurology and psychiatry, diseases of children, surgery and orthopaedics, obstetrics and gynaecology, diseases of the sense organs, and dermatology.

The directors of the Scottish Widows' Fund and Life Assurance Society have appointed Professor D. Murray Lyon, M.D., to succeed the late Dr. G. D. Mathewson as principal medical officer.

The King of the Hellenes has by Royal Warrant appointed Sir Aldo Castellani medical adviser to His Majesty.

The *Deutsche medizinische Wochenschrift* has published a special issue devoted to the medicine of sport on the occasion of the Olympian Games held at Garmisch-Partenkirchen from February 6th to 16th.

The December issue of the *Bulletin de l'Office International d'Hygiène Publique* is devoted to the subject of yellow fever.

Edward Arnold and Co. announce for early publication *Hydrotherapy and Climatotherapy*, by Dr. Matthew B. Ray, and *The Toxaemias of Pregnancy*, by Dame Louise McIlroy.

The January issue of the *Blood Transfusion Service Quarterly Circular* of the British Red Cross Society pays tribute to the great assistance rendered to this service in London by the late Dr. R. G. Canti. He abolished the procedure of cutting down to reach a suitable vein, secured the appointment of a medical officer to the service, and obtained a grant from the Medical Research Council towards the medical officer's salary. Dr. Canti was closely associated also with the negotiations which led to the marketing of a cheap blood-testing serum of high potency.

Pickfords Travel Service (205, High Holborn, W.C.1) inform us that for members attending the South African Medical Congress at Pietermaritzburg, June 29th to July 3rd, they can obtain a rebate of 15 per cent. on tariff fares from the Union Castle Line or the German African Line.

At the meeting of the Académie de Médecine on January 28th the president, Professor Hartmann, delivered a short address in honour of King George V, followed by one minute's silence. Owing to the death of King George and the national mourning for a fortnight observed by France on that occasion, the inaugural meeting of the Académie de Chirurgie, mentioned in our issue of February 1st, was postponed to February 5th.

The Ramaer Medal, which is awarded by the Dutch Association for Psychiatry and Neurology every four years for the best work on this subject, was recently presented by Professor Ariëns Kappers, at the annual meeting of the society, to Dr. C. Otto Roelops for his work on optical delusions.

Geh. Rat Professor Ludwig Aschoff of Freiburg has been awarded the Shield of Nobility by the Chancellor of the Reich on the occasion of his 70th birthday.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, five lines).

The **TELEGRAPHIC ADDRESSES** are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin).

QUERIES AND ANSWERS

Analgesia in Midwifery: Anaesthetic Explosions

Dr. J. L. MOIR (Barrister-at-Law, Middle Temple) writes from Cemaes Bay, Isle of Anglesey: The question of anaesthetics and analgesics in midwifery is very rightly much to the fore in these days. I shall be much obliged if you will publish this letter, so that a clear and definite opinion can be given on a matter which is of vital importance to the profession and the public. Is there an *appreciable* risk of fire or explosion (if ordinary precautions as to proximity, etc., are taken), if ether is used by the open method, in a room in which there is an open fire, and/or

gas or lamps? How many actual cases of fires or explosions have been recorded under these circumstances? Is the risk so great as to warrant the use of the—to the patient—more dangerous chloroform, in preference to the less dangerous, but more inflammable, ether? For over twenty years I have always used ether in midwifery, and have never had the slightest anxiety during its administration; it seems to be particularly well tolerated by the woman in labour. Now that the risk of fire or explosions has been brought forward so prominently one would like to have an authoritative ruling, which would settle the matter one way or the other.

Recurrent Nightmares

"R. C." writes in reply to "H. P. C." (February 8th, p. 294): In my practice I have had several cases such as you describe, and in each one of them the cause was found to be an unsuspected nasal sinusitis. The symptoms cleared up entirely when this was drained by the continuous non-operative methods suggested to me by Dr. Rosa Ford.

Priapism after Pruritus Ani

"A. M." writes: The case of priapism following pruritus ani (December 21st, 1935, p. 1240) is clearly of psychoneurotic origin. Each symptom separately is a typical neurotic one, and the change over from an anal to a genital manifestation is quite characteristic of neurosis. Psychotherapy is needed, but if the psychopathic diagnosis is put bluntly before the patient he will hotly deny it. The fact that he admits to a neurasthenia opens a means of approach. Suggest to him that a course of psychotherapy (preferably Freudian analysis) will ameliorate his neurasthenia and may perhaps cure the priapism.

Income Tax

Dividends from Abroad

"M. E." is a Canadian by birth, but has been in practice in England for fifteen years. He has Canadian investments bearing dividends, and brings money into this country from that source. Is he liable in both countries?

*** Yes. He is liable to assessment here on the amount of the dividends arising in Canada before deduction of the Canadian income tax. But from the amount of the United Kingdom tax he is entitled to claim a deduction calculated on the gross amount of the assessment at one-half his appropriate rate or at the Canadian rate, whichever is less. The inspector of taxes is entitled to make assessments for the current and previous six financial years.

LETTERS, NOTES, ETC.

Foreign Body in Child's Heart

Drs. T. T. W. EATON and W. MULHALL CORBET (Canvey Island, Essex) write: We are aware of the incredible nature of this case, but feel impelled to place on record what we believe to be an occurrence unique in the annals of pathology. A female child was born at term to a primipara, who had an uneventful gestation and a normal labour. The child appeared normal in every way, but died suddenly some hours after birth. A post-mortem was ordered, and the examination was carried out with the most meticulous care by one of us (T. T. W. E.) in the presence of the other, whose case it was, there being no professional connexion between us. Nothing of importance was observed until the heart was removed and dissected with a scalpel and a pair of unplated surgical scissors. On opening the right ventricle a small bright object was seen lying free within the cavity. It was a little piece of metal resembling brass or gilded tin, a circlet of sorts, folded upon itself, with regular serrations along its edge and measuring roughly 3 by 2 mm. It looked something like the claw setting of a toy jewel ring. We emphasize that there was no possibility of its having been dropped by one of us as we leaned over the heart, or of its having come from one of the instruments used, or of its having been picked up from the post-mortem table. We naturally examined all these possibilities critically before ruling them out. The explanation of its presence which is forced upon us by the process of exclusion seems as fantastic as the discovery itself, but we would welcome any alternative suggestions. It seems that the foreign body must have been lying in the mother's uterus at the time of conception, and the growing ovum enfolded it so that it finally came to be where it was found. Then when the placental circulation ceased and the child's heart "took over" it caused some momentary disturbance of the circulation, which produced syncope and death.

Prevention of Premature Burial

We have received for publication the following letter signed by Major R. F. E. AUSTIN, R.A.M.C. (ret.), Dr. JANE HAWTHORNE, Dr. J LACHLANE-COPE, and others: The Society for Prevention of Premature Burial, founded in 1896, has for its object the reform of the law relating to the granting of death certificates. Until the beginning of this year the society existed as an independent body, but it is now affiliated with the Council for the Disposition of the Dead Inc., one of whose basic objects is the revision of the codification of the laws relating to death. The council now has in hand a Bill for the registration of funeral directors. This affiliation has a twofold purpose: (1) the machinery necessary for the reform is strengthened, and (2) overlapping is eliminated. But the internal policy and expenditure of the Society for Prevention of Premature Burial continues, and while informing the public of this affiliation we would like to take this opportunity of seeking further interest and support. Funds and increased membership are earnestly desired. All inquiries should be addressed to the Secretary, Society for Prevention of Premature Burial, 30, Castelnau Gardens, Barnes, S.W.13.

Pipe Preservation

Dr. F. WILLIAM COCK (Appledore, Kent), in response to numerous inquiries from those who read his letter (February 1st, p. 242), gives the following advice on how to prolong the life of a good tobacco pipe: (1) Have three or four pipes in use. (2) Never recharge a hot pipe. (3) Keep two ounces of spirits of chloroform in a stoppered phial (*N.B.*, corks stick); it is better than either spirit or chloroform alone. Also have at hand a penny bundle of cotton-on-wire cleaners, an old but serviceable pair of Spencer Wells forceps, and a slightly vaselined rag. (4) Scrape out charcoal *lightly* when layer has got too thick at mouth, but never scrape to show wood underneath charcoal; treat your friend kindly. (5) Pass cleaner down to bottom of bowl, dip free end in spirits of chloroform, catch hold of bowl, and pull through. Repeat if very foul. Blow through, wait five minutes, and you have a clean, sweet pipe. If outside of bowl is dulled by spirits wipe over with the vaselined rag.

Disclaimer

Dr. D. THOMSON writes: I beg on behalf of my brother, Dr. Robert Thomson, Mr. E. T. Thompson, and myself to disclaim any responsibility for the publicity in the lay newspapers which has recently appeared with regard to ourselves and our work. This has arisen, of course, from our article on oral vaccines which appeared in the *British Medical Journal* of February 8th. We have been pestered by the Press, but have refused any interviews with them on the matter, in spite of the fact that many representatives have called upon us. It would appear that the interest taken by the lay press in colds and influenza is so great that it is almost dangerous now for a doctor to publish an article on the subject except in some obscure medical journal. Dr. Robert Thomson's photograph appeared in an evening newspaper without his knowledge or permission.

Corrigenda

Treatment of Gastritis

Owing to a mishap in the printing department the three last lines at the end of the paragraph headed "Treatment of the Cause" in the article by Dr. S. W. Patterson entitled "Treatment of Acute and Chronic Gastritis" (February 8th, p. 272), and the three last lines in the right-hand column of the same page were incorrectly printed. The first should have read: "The patient's habits in regard to alcohol and tobacco may need correction. Smoking before meals and alcohol on an empty stomach should be forbidden." The second should have read "the acidity of the gastric juice and the general character of the gastric secretion does not therefore come much into consideration. The meals should be small and rather dry, a little fluid being . . ."

Dr. GEORGE CHESNEY wishes to correct an error in his article on "Alum-Precipitated Toxoid in Diphtheria Immunization," which appeared in the *Journal* of February 1st (p. 208). In the last line but one of the second paragraph "a single dose of 0.1 c.cm." should read "a single dose of 1 c.cm."

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 51, 52, 53, 54, 55, 58, and 59 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 56 and 57.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 76.